THE MARINE RECORD

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ROBBING THE MANITOBA GRAIN SHIPPERS.

American grain shippers may think that they suffer at the hands of the railroads, but they are highly favored as compared with their brother shippers of Manitoba. We take the following from a recent number of the Montreal Trade Bulletin:

The undeniable proofs which we have repeatedly brought forward to illustrate the manner in which the poor farmers in Manitoba are bled by the exorbitantly high rates charged on grain by the Canadian Pacific Railway continue to accumulate, one of the numerous instances that are constantly occurring being that of a carload of feed wheat shipped from Manitoba to this city containing 630 bushels, which arrived here a few days ago and sold at 40 cents per bushel, amounting to $252. Of this sum $220 went into the pockets of the C. P. R., leaving a balance of $32, which, after deducting commission charges for selling and the shipper's profits, would reduce the above balance to at least $20, or about 3⅛c per bushel. Out of 630 bushels of wheat shipped from Manitoba to this market the C. P. R. appropriates 550 bushels for freight and other charges. But this is not all, for after making the above extortionate charges the company charges the much-abused Manitoban 38,000 pounds, or 220 pounds more grain than he actually ships. These are facts that cannot be disputed. If this is not bleeding the poor Manitoba shipper with a vengeance, we would ask, what is?

The Winnipeg Board of Trade protests against the freight rates between Fort William and that city on the Canadian Pacific, which have been advanced from 92c last year to $1.16 this on first class freight. The road, moreover, discriminates by making a lower rate on freight coming to Port Arthur on its own boats and those of the Beatty Line, thus shutting out all other Canadian tonnage. The board points out that these lines have the advantage at equal rates and that Canadian vessels should be encouraged to go to Fort William, as most of the grain from that port goes in American vessels.

WORKINGS OF THE CAR FERRY.

Referring to the business of last year the president of the Flint & Pere Marquette road in his annual report notes that to the ability of the steamers and the road to handle the grain products of Wisconsin and the northwest may be attributed the gratifiying increase of $116,165 in gross earnings for the first three months of 1896 over the corresponding months of 1895. The classes of freight which to the present date the road has been able to handle have been confined to such articles as could be transferred to car from boat and boat to car. To free the road from its limitation and to secure additional business of a higher class from Wisconsin and the northwest, it was deemed prudent to add to lake equipment a car ferry steamer. With this end in view, arrangements have been made for the construction of the steel ferry with tracks for 30 cars, now building at F. W. Wheeler & Co.'s yard, West Bay City. This boat will be the largest of her class, and it is expected that she will be ready for service during the coming autumn, at which time connection with the rails of the Chicago & Northwestern Railway and the Wisconsin Central Railroad will be made at Manitowoc. Under favorable conditions two round trips a day will be made by this steamer.

Arrangements have been concluded with the Ann Arbor Railway Company for the use of its valuable terminal property in Toledo, and of its right of way and track from Alexis to the city. This will enable the Flint & Pere Marquette Railroad Company to secure, at a moderate outlay, an independent entrance to a large and prosperous city, and a direct connection with the rails of the Columbus, Hocking Valley & Toledo Railroad, Pennsylvania Company, Wheeling & Lake Erie, Lake Shore & Michigan Southern Railway, Michigan Central Railway, and Cincinnati, Jackson & Mackinaw Railway; also with Wheeling and Michigan Central Belt lines, through which the other railroads centering in Toledo are reached.

MARINE RECORD Life Savers' Series.

CAPT. JOSEPH DIONNE.

A man who has a good deal of experience in the theory and practice of saving life at sea is Capt. Joseph Dionne, keeper of the U. S. Life-Saving station at Two Rivers, Wis. Capt. Dionne was born in 1855 and was reared as a fisherman. He entered the service in 1880 as surfman at the Chicago station, under Capt. St. Peter, who is now keeper at Jackson Park, Chicago. He remained in the service three years, at the close of which he resigned, thinking he could do better in the fishing trade.

CAPT. JOSEPH DIONNE.

He reentered the service at Sturgeon Bay Canal in 1886, enlisting as Number 1 under Capt. Nequette who is now keeper of the station at Sheboygan. When Capt. Nequette was transferred from the canal station in 1889, Capt. Dionne was appointed keeper there, and he had charge of that station and crew until 1892. He was then transferred to the Two Rivers station, where he is at present in command. One of the most recent signal exploits of Capt. Dionne and his crew was at the W. L. Wetmore on Nov. 12, 1894, stranded some distance from the station. The crew were carried by a special train to a point opposite the wreck and eighteen miles away. Although the weather was exceedingly nasty, the crew rescued and landed thirteen men, making two very hazardous trips from the rocky beach.

John N. Young, of Brockville, Ont., has been assigned to duty in the Canadian Customs department at Duluth, where he will be the assistant of F. W. Bolderick through the season.

NEWS AROUND THE LAKES.

BUFFALO.

A VERY COMMONPLACE PORT, FROM A NEWS STANDPOINT, JUST NOW—LIGHT ANTHRACITE BUT IMPROVED BITUMINOUS COAL SHIPMENTS.

Special Correspondence to The Marine Record.

BUFFALO, May 26.

There is at least one improved condition in the lake trade and that is the advance of coal rates ten cents a ton to Lake Michigan. The demand for tonnage has not been active for any point, but the last advance did not attract boats, and something further had to be done if shipments were to go on. The fact that the lines with tonnage and coal of their own did not put them in with any vim is enough to show that the demand is really slack. This port has shipped but a small amount over 150 cargoes of coal yet this season, most of which has gone to Chicago and Milwaukee.

There is a general pluming on the part of the insurance interests because they have caused vessel owners to skurry about and get their property rebuilt so that it will rate up and command low rates of insurance, but the Buffalo dry docks are now about out of all work that is not somehow connected with the wear and tear of the season.

Russell & Watson are sending two sets of their special pattern fluted vessel lamps to Davidson's shipyard to go into the outfit of some of his new vessels. The city waterworks cribs in the Niagara River has also been furnished a set from the same establishment.

It is a little queer that so much soft coal is going from this port by lake this season when the hard coal traffic is slack. This is not a soft coal shipping port, so the amount shipped is not really large, but it is already several times as much as is often shipped for a whole season.

There has been more than the usual amount of quick handling of cargoes here this spring. The Parnell, Marion and others within a few days have come in loaded and gone ont with another load in the same day. The quick handling of car coal on the soft coal docks in Ohio may some day make them as swift as Buffalo, but they are not in it yet.

There is some interest in vessel circles in the peg-leg railroad that Capt. Alex Clark, Capt. Killeran and others are building from Bertie, Ont., on the Grand Trunk, to Crystal Beach, especially as it is a novelty in this section. The track is already laid on top of the line of posts and the cars are in position. The electric power is supplied by means of storage battery. The line, a mile or so in length, will be ready as soon as the excursion boats begin to run. It is an odd sort of a rig, but appears to be about what is needed to connect the resort with the railroad.

It has not been mentioned in print, but the harbor tugmen are complaining that the dredgers have dumped so much heavy stone outside of the breakwater that nothing can come near it on that side without danger of striking. Of course it is not expected that anything will, but if any vessel should happen to drift on without knowing it there would be trouble before reaching the breakwater.

In this connection the weakness of the fog-whistle is again demonstrated. The one on the north end of the breakwater is as good as any of them, probably, but it has been demonstrated time and again in the fog that prevailed last week that the whistle could not be heard to any certainty more than a mile or two. There have been some unusually bad fogs within a week. On Friday morning the City of Buffalo actually stopped from four o'clock to eight to wait for it to lift, or if she made any headway the passengers could not perceive it.

The Buffalo Canoe Club is just as near being actual marine as possible without having to go into commission. There are no marines in the membership, for all that. T. P. Carpenter, late general passenger agent of the Lake Superior Transit Line, and of the Northern Steamship Line, is an enthusiastic member, and has a new boat, 17 feet long from a Toronto builder. The membership is confined to 100 and has already reached the limit. The club house is about ten miles up the Canada shore, in a picturesque retreat, and the club has captured Steward Hilton and his wife from the big passenger liner North Land, and sets up table d'hote three times a day. The departure of the yacht Hall-

stead for the club house last Saturday afternoon was a very interesting affair. The members are boatmen all right and have a canal boat as foundation of a boat house full of craft, but every soul of them took a bicycle along and the upper deck of the yacht looked like a stray wheel factory. Next Saturday there will be a full day put in at the club and a number of races and games will be on the programme.

Capt. C. A. Davis, of the ocean schooner Governor Ames, has been here on a visit to Mr. A. J. Russell, of Russell & Watson. The schooner is the largest of her class afloat and is carrying soft coal this season from Providence to Newport News. A round trip was made by her in 11 days not long ago. The captain is the largest owner in the schooner and has others besides. He is therefore not confined to sailing and has been indulging in a trip up the lakes, coming back filled with praise of the wonderful things he had seen. Something came up that demanded his presence on the big schooner and he returned home in haste.

This has been the dullest port on the lakes in regard to real news for weeks. It would be wicked to wish something might happen here, for marine news is usually bad news for somebody, but it is a trifle odd that with a long string of accidents on the lakes the past week, such as is unusual at any time, there is nothing but the quiet coming and going of the fleet to chronicle here.

There is a sign of labor troubles in certain directions. Now it is scoopers, now 'longshoremen and now lumber shovers, but the complaints are mostly the work of the professional agitator, in print or put, and the prospect is that nothing will come of it all.

JOHN CHAMBERLIN.

DETROIT.

INSURANCE ON HULLS SHOWS UP WELL AS COMPARED WITH BUSINESS IN FORMER YEARS—OPPOSITION TO REMOVAL OF PELEE ISLAND LIFE-SAVING STATION.

Special Correspondence to The Marine Record.

DETROIT, May 26.

Chartering of grain, or covering cargoes with insurance is almost a thing of the past in Detroit, and since the British and Foreign captured the bulk early in the spring, brokers are doing less than ever.

In marine hull insurance, however, the companies report the usual amount, and claim that the restricted form of policy used this year as compared with last, has not diminished the volume of business done.

What the vessel men want is safe insurance, under a safe policy and they will have it even at a high price, rather than run unprotected.

Bissell's big wharf, which has been leased to the Northern Steamship Company, is without doubt, the finest dock frontage on the chain of lakes; combining ease of access, length and water depth, with one of the finest ware houses on fresh water.

Numerous complaints have been made by vessel captains about newspapers printing despatches, or in giving an accident or stranding, a sensational or alarming heading and notice. They say that it often seriously hurts them and can do no one any good, and in the majority of instances suddenly frightens all who are interested in the vessel or her crew.

Although it is probably too late for a protest to do any good, still one may be raised against the removing of the Pelee Island Life Saving Station from its present location to Point Pelee, no one will deny, but that the need is lessened for one in its present location is not true. Any one familiar with the North Passage knows how hopeless would be the task for a life-saving crew to pull over to the south end of Pelee Island, in time often to be of any service, and that the most of the bad reef lies thereabouts a glance at the map will show. The saving of the crew of the Brenton a short time since, amply illustrates this, for in her position at that time, the matter of an hour would mean life and rescue or loss and death.

H. M. MCCORMACK.

CHICAGO.

PARTICULARS CONCERNING THE SUNRISE-133 COLLISION —SUMMER PASSENGER BOATS GOING INTO COMMISSION—MONDAY'S GALE.

Special Correspondence to The Marine Record.

OFFICE OF THE MARINE RECORD,
CHICAGO, May 27.

The steamer Robert Holland and consorts Sophia Minch and Warmington arrived here Saturday night with 1,760,000 feet of lumber from Duluth.

The Sunrise, one of the most noted schooners on the lakes, is now a total loss, through collision, which sent her to the bottom of Lake Michigan. From Capt. Duncan Buchannan's statement it apppears that early on Thursday morning last the schooner, bound down the lake, light, was running free under her lower canvas in a steady breeze from the SSW. in a dense fog when two of the regular fog signals (three blasts) were heard on the port side. The steamer blowing the signal passed all clear, when directly afterward the whaleback barge No. 133, consort of the steamer (Gratwick), ran into the schooner, striking her on the starboard bow about eight or nine feet from the stem and damaging her so badly that she soon filled and sank. Her captain and crew were compelled to take to the yawl boat as soon as possible to save their lives. They were taken on board the No. 133 and afterwards transferred to the Gratwick. The Sunrise went down about 65 miles N. by E. ½ E. from Chicago. Her captain and crew speak in the highest praise of the captain and crew of the Gratwick, who treated them with great consideration. Capt. Buchanan and his crew lost everything but the clothes they had on, and the captain also lost $140 in cash. The Sunrise was of 439 gross tons and was built at Cleveland in 1862. She was owned by Wm. Scheele, of Sheboygan, Wis.. and Capt. Buchanan, who had put large repairs on her last winter. Her owners have libeled the steamer and barge.

In the foundering of the schooner Sunrise through collision with whaleback barge No. 133, Capt. Duncan Buchanan has lost most of his savings. He is not despondent on this account, however, and is ready to buckle down to hard work again, partly contented with having saved his own life and the lives of his crew out of the casualty.

Capt. Wallace is here from Cleveland, engaged with the O. S. Richardson Fueling Co. Other things being equal it is safe to say that the friends of Capt. Wallace will give him a good share of their patronage.

The Weather Bureau service must have been taken by surprise on Monday morning when the small cyclone and heavy thunder struck this locality. The Graham & Morton Line steamer City of Louisville, which left St. Joseph Sunday night for this port, caught the weight of the blow, which Capt. Griffin reports as one of the worst storms he ever encountered, although it lasted only a few hours. The steamer, which since her rebuild is practically new, and has powerful machinery, behaved splendidly in the heavy gale and squalls, which struck her first when in midlake, and she rode through without any damage, many of her passengers hardly realizing that the storm was so heavy as to endanger life and property.

Grain freights are stronger on a basis of 1¼c on corn to Buffalo. There has been considerable increase both in supply and demand during the past few days and a further rise in freights is anticipated soon.

J. A. Calbick & Co. chartered the steamer Maggie Duncan and consorts Tyson and Favorite for salt from Ludington and Manistee to Duluth and for lumber from Duluth to Chicago at $2; steamer E. A. Shores and consort Uranus and steamer John Spry and consort Johnson for lumber from Duluth to Tonawanda at $2.

Capt. George Tebo, of the Independent Fuel Co., is always energetic after the interests of his firm, and few if any steamers enter or leave the river without receiving a visit from Capt. George.

Owners of Chicago yachts are busy at work fitting up for the season and there is every indicatton of a greater interest being taken in yacht sailing this year than ever before. Several new craft have been added to the already good-sized fleet, many of which are nearly ready for service.

Capt. W. M. Egan has had a very delicate operation performed upon his eye, necessitated by the inroads of glaucoma, a disease, which, unless arrested in time, invariably results in blindness. Capt. Egan's friends all feel relieved now that his eyesight is so much improved.

A pleasant surprise party was tendered on Monday night to Mr. Hugh MacMillan, the well-known agent for the Western Transit Co. at this port on the occasion of his fifty-third birthday. Among the friends who called to congratulate Mr. MacMillan were Capt. J. S. Dunham, Jas. Carry Evans, Eugene Henry, Daniel T. Helm, Henry Werne, C. A. Macdonald, T. T. Morford, Wilfred Massey, Geo. Harris and Thomas C. MacMillan.

The Goodrich Transportation Co.'s splendid twin-screw steamer Virginia will commence running between Chicago and Milwaukee on Wednesday, June 3. The Virginia is a great favorite with the traveling public who will hail with much pleasure her advent for another season.

Capt. James Davidson, the well-known shipbuilder of Bay City, visited this port last Saturday. He is looking as well and hearty as ever.

Mr. Philip J. Minch was here last week looking after the recent collision case between the steamer Onoko and schooner Mary D. Ayer.

Capt. J. W. Melchert, formerly of the schooner Charlotte Raab, has fitted out and will sail the schooner Jessie Phillips. We wish him much success.

The Graham & Morton Transportation Co.'s fine side-wheel steel steamer City of Chicago made her first appearance here this season on Saturday and commenced running between this port and St. Joseph and Benton Harbor. The company's steamer City of Louisville arrived Monday morning, her first appearance here since her rebuild which has much improved her and given her a fine appearance.

The passenger traffic by lake is speedily picking up and there is now a considerable movement in travel between Chicago and other Lake Michigan ports.

THOMAS WILLIAMS.

CLEVELAND.

THE CRUISE OF THE EDNA G.—SHORT PARAGRAPHS CONCERNING EVENTS IN NORTHERN OHIO PORTS.

CLEVELAND, May 28.

The cruise of the Edna G. will long be remembered by the party who went out on her last Thursday morning for a ride to Detroit, as she left the Cleveland shipyard to go to her owners at the head of Lake Superior. The compass had not been adjusted, but this was considered too trivial a matter to keep a boat from navigating Lake Erie, and she started out about 8 o'clock last Thursday morning and was headed for the Dummy at Point au Pelee. The Edna G. made the run in great style, and bowled along easily at 16 miles per hour, according to the patent log. This rate of speed should have taken her to the Dummy in three hours, but by noon there was still no land in sight. The guests gathered in the bow, forming a veritable Christopher Columbus group after the John Rogers style as they peered through the haze and tried to discover America. They, like Columbus, were also seeking the Northwest Passage, and according to the sequel they had almost the same luck. Finally "Land ho" was discovered on the port bow, but instead of getting into the Queen's dominion closer approach revealed to them that they were nearly to Sandusky. The local attraction of the steel hull had been too much for the unadjusted compass, the card of which was of about as much use as if the dial of a Waterbury clock had been in its place. The slight motion of the boat had evidently shaken the card around to the left gradually and the trusty wheelsman had kept his wheel going to starboard until the Edna G. had described a gigantic semi-circle, voyaging something over a hundred miles before Sandusky was reached. The course then lay along the south shore. But the compass was adjusted on Detroit River before the Edna G. went further on her trip. The yacht behaved admirably all the while. She did not make steam readily at first, but this was because the firemen were unaccustomed to her tubulous boilers. Mr. Coleman, who represented the Babcock & Wilcox Co., on the trip, finally went to the stokehold and superintended the firing, and the good results were very quickly shown. The Edna G. is a crack boat, and will probably do more fancy cruising than hard work this summer.

Capt. Frank Brown, who has been in charge of Pickands Mather & Co. fuel business for the past four years, will now have charge of Hanna & Co.'s fuel lighter at Ashtabula.

Capt. W. H. Moody, of the steamer C W. Elphicke, and Miss Jennie Larson, both residents of Vermillion, are to be married the latter part of this week, at that port. The exact date will depend upon the arrival down of the Elphicke.

The new hoists at Ashtabula, erected last season by the King Iron Bridge Co , of Cleveland, made a record last week in unloading the Coralia. The previous cargo of 4,462 gross tons was taken out by the portable hoists in 18 hours, but the new Kings beat this record badly last Friday, when they unloaded a cargo of the same size in 13½ hours, half the load going into cars and the remainder into stockpile.

E. H. Holden, of Two Harbors, bought the little tug Carrie B. at Ashtabula a few days ago and had her hoisted on board one of the Minnesota boats, to be taken to Two Harbors.

Supt. Kiah, of the Tenth Life-Saving District, was in Cleveland this week.

Mr. W. J. Leary has been appointed general eastern agent of the Cleveland & Buffalo Transit Co., with headquarters at New York, vice, T. B. Lynch, deceased.

RULES FOR PASSING INTERNATIONAL BRIDGE.

Gen. Supt. F. H. McGuigan, of the International Bridge Co., requests THE RECORD to print the following:

Tugs and other steamers navigating Niagara River, in order to pass the draw of the International Bridge, are requested to adopt the following course of signals:

First.—On entering the river, and when opposite the Dummy Light, one long blast of the whistle must be sounded, continuing for at least 30 seconds, to distinguish it from ordinary tug whistles.

Second.—In approaching from above, leave buoys on starboard side and pass through draw on port side of swing pier.

Third.—At night a red light will be placed on the up- and down-stream ends of the pivot pier rests, also two red lights on the pivot pier, viz.: One on the each side to mark channels. A red light will be placed on each of the two piers, on each side of the pivot pier. The bridge will be provided with three lights, placed about 15 feet above its top, viz.: One in the center and one near each end. These will show three red lights to navigators when the bridge is closed against vessels; and when the bridge is open for vessels to pass the three lights will show green to midway between the extreme red lights of the pivot pier and the red lights on the pier of the fixed spans.

Fourth.—During the day, if for any unforseen cause or accident the swing should not open on the approach of vessels, a red flag, indicating danger, will be hoisted on the flag-staff on the swing; at night a red light will be hoisted.

Fifth.—In foggy or smoky weather, when vessels are approaching the bridge, keep a sharp lookout for short fog whistles from the tug International, and draw engines at intervals of 10 seconds until draw is sighted.

WRECKS AND WRECKING.

All sides seem to be preparing for a lawsuit in the collision case of the Waldo and Choctaw, which occurred at Sault Ste. Marie on Wednesday morning of last week. H. D. Goulder, of Cleveland, and Judge E. S. B. Sutton, of Sault Ste. Marie, have been retained by the owners of the Choctaw, and Oren & Webster and John Shaw, of Detroit, will look after the Waldo's interests. A Marquette correspondent announces that according to the wreck report the whistle of the Waldo was stated to have been broken, thus making it an unavoidable accident or holding the Waldo responsible. THE RECORD was told the story of the collision by an eye witness to the disaster, however, who made no reference to the breaking of any whistle cord. As the Waldo is provided with a wire in addition to her whistle cord, it is difficult to see how such an occurrence, at the distance the vessels were apart, could have had such a result. The facts, as they will come out in case the matter goes into the courts, will without doubt, be found radically different from that told in the papers, and the placing of the blame will be correspondingly altered. Both Capt. Ward, of the Choctaw, and Capt. Duddleson, of the Waldo, very properly declined to talk except to their attorneys. Capt. Waldo has since gone to California, where his wife was dangerously ill. She died last Friday evening. The tug Favorite has been wrecking on the Choctaw, and the Waldo came to Cleveland for repairs after lightering 250 tons of ore.

Collision caused another total loss last Thursday morning, May 21, when the schooner Sunrise, after safely passing the steamer W. H. Gratwick, (wood) was struck by the latters consort barge 133, in the middle of Lake Michigan. The crew escaped with their lives, but with little else. The damage to the 133 necessitated the removal of three plates on the port bow. The barge is insured, with collision liability covered, and the Sunrise was not insured. Steamer and barge have already been libeled. The Sunrise belonged to Henry Scheele, Jr., of Sheboygan, and was valued in Inland Lloyds at $5,000, with a B1.

Another fatal accident occurred Saturday morning off Thunder Bay when the Rhoda Stewart blew out one of the large flews of her boiler. Harry Keston, second engineer, of Alpena, Fireman Robert McNerton, and Court Schrader, deck hand, were fatally scalded. The damage to the steamer was not heavy.

The steamer V. H. Ketchum, with the Wadena in tow collided with the steamer St. Louis at 6 o'clock Monday morning off Point aux Barques, Lake Huron. The stem of the Ketchum was broken and the stern of the St. Louis damaged. The Ketchum's headway was stopped so that the Wadena came on, striking the Ketchum amidships. About 50 feet of the steamer's rail was torn away and a hole was made in her starboard side, from the rail nearly to the water line. The repair bill will be heavy, but the Ketchum was able to proceed with an apron over the hole.

The barge Nelson, in tow of the Folsom, got beyond control above the Canadian lock at the Sault Wednesday night, and struck the pier, staving in some planking on her starboard bow. She sank in 20 feet of water.

An unknown schooner has been reported ashore on North Manitou Island.

Car Ferry No. 1, while passing through Sturgeon Bay Canal Saturday night, damaged the government dredge there to the extent of $1,000. The tow line was too long.

The Cranage, light, South Chicago to Escanaba, went ashore on Plum Island Monday morning in a dense fog. The tug Monarch will undertake her release.

It is stated that the American Salvage & Wrecking Co. is about to charter the H. A. Root on which an expedition will be sent to try to work on the steamer Pewabic, lost in 1865 off Thunder Bay, Lake Huron.

Capt. Jay Hursley has succeeded in getting the Moonlight off Chocolay Beach, and she and the Kent, both in good shape, will be taken to Duluth. It is likely that J. C. Gilchrist will buy the schooners as they are and will rebuild them. They are now on their way to Cleveland.

It is now proposed to continue the search for the lost Dean Richmond by means of a balloon, experience having proven that persons high in air can see to a considerable depth in reasonable clear water.

The loss on the Acadia (Br.), which caught fire recently in the Welland Canal, has been fixed at $150 on hull and $2,500 on cargo.

A channel has again been dredged to the stranded schooner Commerce in Seul Choix Bay, and the wrecker Favorite will make another attempt to pull her into deep water,

The insurance on the Escanaba is $29,500. divided as follows: Marine Insurance Co., $5,500; Union Marine, $5,000; St. Paul, $5,000; Western, $3,300; North American. $3,000; Commercial Union, $2,000; Mannheim, $2,000; Detroit, $2,000; Etna, $1,500.

FREIGHT NOTES.

Marquette's ore shipments for the week ending May 16 were 57,292 tons and for last week, 50,499 tons.

Ashland ore shipments for the week ended May 23 were 72,000 tons, and for the season 216,000 tons.

Last week's shipments from Buffalo were: Coal, 64,374 tons; cement, 24,507 tons; salt, 9,516 tons; sugar, 29,003 barrels.

Gladstone shipments for two weeks ending May 23 were: Ore, 21,100 tons; flour, 2,000 barrels; grain, 2,100,000 bushels; cedar, 80,000 pieces; lumber, 375,000 feet; pig iron, 900 tons.

Stocks of wheat in store at the head of Lake Superior are apportioned among the various terminal elevator lines as follows: Belt Line, 977,869 bushels; Consolidated, 1,315,703; Globe, 3,541,360; Great Northern, 1,058,747; Superior Terminal, 1,435,683; Consolidated B, 113,979; Consolidated H, 41,984; total, 8,485,324; in store at Minneapolis, 17,467,414 bushels.

The east shore steamer lines on Lake Michigan transferred from Milwaukee during the month of April 362,757 barrels of flour, 33,184 bushels of wheat, 98,120 bushels of barley, 164,710 bushels of oats and 6,987 tons of millfeed. Most of this consisted of the accumulation which remained over from March, and the record therefore justly belongs to the winter business eastward across the lake. Thus the grand total of freight handled by the different routes is swelled to 1,670,018 barrels of flour, 289,058 bushels of wheat, 1,226,331 bushels of barley, 2,076,030 bushels of oats, 5,000 bushels of rye, and 31,836 tons of millfeed. Total of grain, 3,596,419 bushels. The April shipments were divided as follows: Flint & Pere Marquette line, 143,620 barrels of flour, 97,410 bushels of barley, 164,410 bushels of oats and 2,964 tons of millfeed; Grand Haven line, 90,304 barrels of flour, 1,184 bushels of wheat, 307 bushels of oats, 170 bushels of barley and 2,588 tons of millfeed; Muskegon line, 73,473 barrels of flour, 5,000 bushels of wheat, and 1,175 tons of millfeed; St. Joseph line, 55,360 barrels of flour and 360 tons of millfeed.

PORTABLE STEAM HAMMERS.

A most useful tool for shipyards is the portable steam hammer for welding up stern and rudder frames. It has always been a most difficult and rather imperfect operation to unite these parts properly by hand hammers, and they are usually too broad to be accessible to the ordinary fixed steam hammer. Two large parts of a stern frame have usually to be heated in *situ*, while placed together in the position which they are to occupy when welded. They are heated at the parts of the junction in open fires. When brought up to a welding heat the fires have to be withdrawn quickly, and the piece called a "glut" is brought at a welding heat from another fire, and is hammered into the space where the joining takes place. This has usually been done by a heavy sledge hammer having three or more shanks, and handled by as many men. But by this mode the welding is very unreliable. The hammer is much too light to make a solid weld, and the work is done at a great disadvantage, and with harassing labor. The portable steam hammer has altered all this. It resembles the ordinary smithy steam hammer, except that instead of the cylinder being attached to a fixed column, it is carried by a jib, like a crane, can be raised or lowered, swung around, or moved to and fro until it is exactly over the work, and by a few heavy blows the welding is done most effectually. The workman who manipulates the hammer and the racking gear is stationed at the base of the crane, quite out of the way. It was first brought out by Messrs. Bennie, of Glasgow, and was first set to work on stern frames in the works of the Parkhead Forge Co. of that city. The kind of work this hammer does could not easily be executed by a hydraulic press.—J. Arthur Gray, in Cassier's Magazine.

LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

PRESIDENT.

J. J. H. BROWN, Buffalo, N. Y.

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Thos. Wilson,	Cleveland.	R. P. Fitzgerald,	Milwaukee.
M. A. Bradley,	Cleveland.	John G. Keith,	Chicago.
J. C. Gilchrist.	Cleveland.	J. S. Dunham,	Chicago.
E. M. Peck,	Detroit.		

VESSEL TRANSFERS.

The underwriters have disposed of their interest in the steamer V. Swain, which burned a year or so ago, to J. C. Gilchrist for $5,000. Capt. Henry Johnson. and Messrs. Chard, Cobb, and others who had uninsured interests, retain them, Mr. Gilchrist managing the steamer. Mr. Gilchrist is figuring on the purchase of the Moonlight and Kent to tow behind the Swain.

The following transfers of vessel property have been recorded:

Tug McCormick, whole, by Boswell, Benton Harbor, to G. G. Hadley, Jr., Toledo; consideration not stated.

Propeller Bloomer Girl, whole, by Mrs. F. J. Preston, to Capt. Thomas Richardson, Milwaukee, $6,104.

Tug D. T. Helm, whole, by receiver of Vessel Owners' Towing Co., to W. H. Singer, Duluth, $5,100.

Schooner Sardina, whole, by Capt. Ole Groh et al. to Capt. W. McDonald, of Manitowoc, $900.

Steamer City of New Baltimore, whole, by M. Freeman, Green Bay, to Capt. Chas. Graves, $3,500.

Tug Grace (Br.) whole, by J. W. Taylor, Wallaceburg, to Capt. I. Mayhew and Wm. Allen, of Mooretown, Ont., $700.

Steamyacht Hattie Ray, whole, by Richard Barrett, Muskegon, to C. H. Burke, St. Joseph; consideration private.

Schooner Driver, one-fourth, by Halvor Halverson, of Sheboygan, to Vascus Roberts, of St. Joseph, $300.

MORE GAS BUOYS.

Among the items added in the Senate to the sundry civil bill are the following: "To establish gas buoys at or near the following places in the St. Lawrence river: One at Charity Shoals, one at Featherbed Shoals, one at Rock Island Point, one near Sister Island light, one at Sunken Rock, one at Bay State Shoals, one at the Lower Narrows, and one at the entrance to the upper harbor, Ogdensburg." For this $4,000 is appropriated.

CORRESPONDENCE.

☞We do not hold ourselves responsible in any way for the views or opinions expressed by our correspondents. It is our desire that all sides of any question affecting the interests or welfare of the lake marine should be fairly represented in THE MARINE RECORD.

WHERE GAS BUOYS ARE NEEDED.

To the Editor of The Marine Record:

Now that a number of gas buoys are to be placed on the lakes the question arises as to the locality in which their location would do the most good to the greatest number. In my opinion there is no place on the lakes that requires a light so much as the southeast point of North Manitou, Lake Michigan, and I would suggest that a gas buoy be placed there till such time as the government sees fit to build a lighthouse on that point.

No 2. Now that there is a very large and growing trade between Lakes Superior and Michigan the placing of Number 2 on Martin's Reef, Lake Huron, would be next of importance to marine men.

Another place that has been the scene of many expensive wrecks is Gull Island Reef, on which the steamer Escanaba stranded. In my opinion it should be marked by gas buoy No. 3.

The southeast shoal of Point au Pelee, Lake Erie, is a dangerous place for all deep draft boats and would be a good place for No. 4 till such time as the Canadian government takes action in locating it.

On the head of the Middle Ground just below Point Iroquois, Lake Superior, would be a good position for No. 5.

Seneca and Waverly Shoals, Lake Erie, near Buffalo, would be good places for Nos. 6 and 7.

I would like to hear the views of others on this subject. My views are pretty broad, as I have taken in all the upper lakes.

Respectfully yours,
H. ZEALAND

Port Huron, May 25.

THE RHUMB LINE CONTROVERSY.

To the Editor of The Marine Record:

I have read in your issue of the 7th inst. a communication from Capt. Pearsons, of Ferrysburg, Mich., entitled "How Many Rhumb Lines?" in which he asserts definitely that there are two kinds of rhumb lines. In order that this erroneous impression may not become current among vesselmen, fourteen definitions of the meaning of the term rhumb line are here presented from standard authorities.

If Capt. Pearsons can name any authority (besides himself) who recognizes more than one kind of rhumbline, or any kind of rhumbline besides the one referred to in all the following definitions, the writer would be glad to hear of it.

Very respectfully,
G. W. L.

Washington, May 23.

Rhumb. In navigation, the track of a ship sailing on a certain course. A rhumb line cuts all the meridians at the same angle, and when this angle is acute the rhumb is a species of spherical spiral, continually approaching the pole, but reaching it only after an infinite number of turns. The angle under which a rhumb line cuts any meridian is called the angle of the rhumb, and the angle that it makes with the prime vertical at any point is called the complement of the rhumb. The projection of a rhumb on the plane of the equator is a logarithmic spiral.—Johnson's Universal Cyclopedia.

Rhumb Line. The curve described upon the terrestrial spheroid by a ship sailing on one course that is always in the same direction relative to the north point.—Century Dictionary.

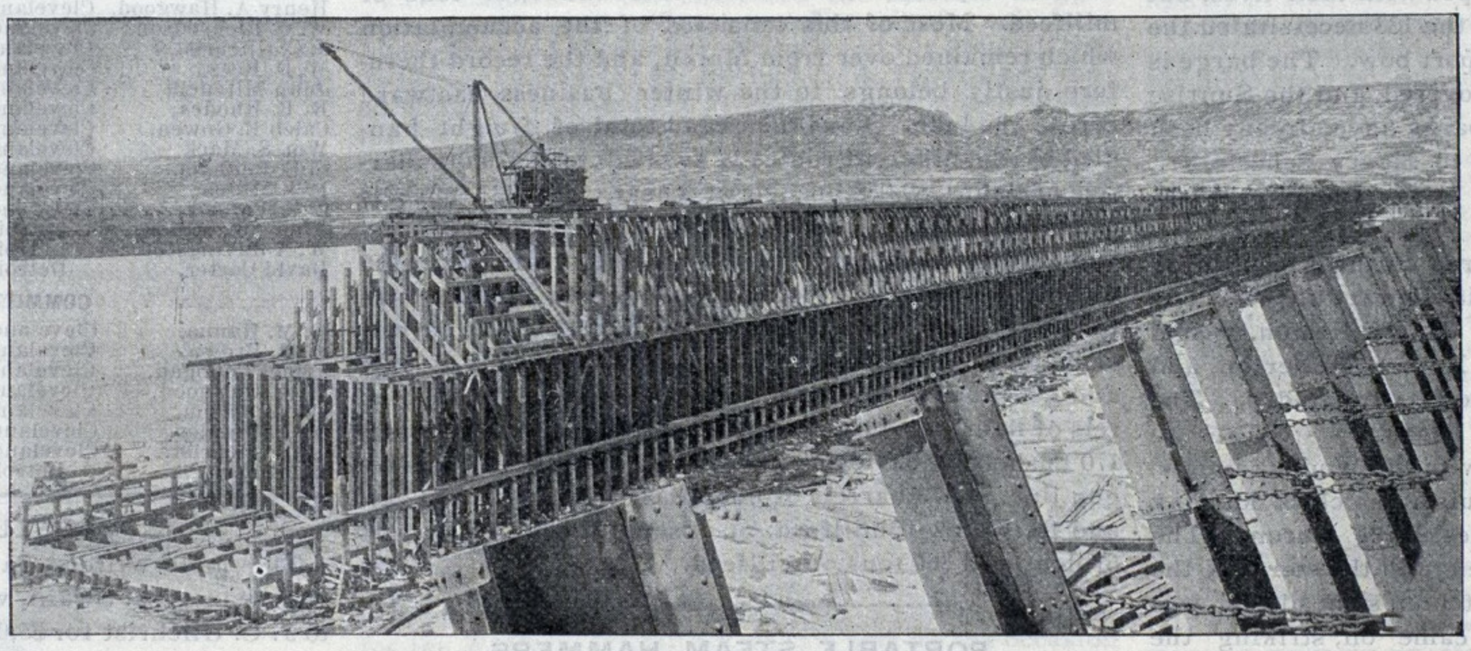
Rhumb Line. A line which cuts the meridians at a constant angle; the loxodromic curve; the equiangular spiral—Hamersley's Naval Encyclopedia, Page 692.

Rhumb Line. Choose a point of land, or assume a position, say 51° 45′ N. and 55° 10′ W. A line drawn on a chart of the Atlantic from the ship's position to the above will roughly indicate the course usually steered which is a rhumb line cutting all the meridians at the same angle, and forming on the globe a spiral curve towards the pole.—Encyclopedia Britannica, Navigation, Page 266.

Rhumb Line. The curve on the earth's surface which cuts all the meridians at the same angle. The rhumb-line is also called the "Equiangular Spiral," and the "Loxodromic Curve." It is the track used ordinarly in navigation, for although it has the disadvantage of not being the shortest distance between two places, it possesses the advantage of not requiring the navigator to alter his course, and it is represented by a straight line on the Mercator chart.—Glossary of Navigation, Rev. J. B. Harbord, M. A.

Rhumb Line. A line which makes the same angle with each successive meridian is called a loxodromic curve; in old nautical works, a rhumb line; more commonly, the ship's track.—Navigation and Nautical Astronomy by J. H. C. Coffin, Professor of Astronomy, Navigation and Surveying, United States Naval Academy.

Rhumb Line. The Mercator projection, so-called, may be said to result from the development, upon a plane, of a cylinder tangent to the earth along the equator, the various points of the earth's surface having been projected upon the cylinder in such a manner as to satisfy the following condition: That the loxodrome, or ship's track on the surface of the sea under a constant bearing, shall appear on the development as a right line preserving the same angle of bearing with respect to the meridians intersected by it as that of the ship's track.—Projection Tables, U. S. Navy, Edition of 1869.



NEW ORE DOCK AT DULUTH—DULUTH, MISSABE & NORTHERN RAILWAY.

Rhumb Line. The track of the ship while preserving the same angle with all the meridians as she crosses them in succession is called the rhumb line.—Practice of Navigation, Raper.

Rhumb Line. The track of a ship when the course is uniform makes equal angles with each meridian and is called the loxodromic curve or rhumb line.—Notes on Navigation and the Determination of Meridian Distances, U. S. Naval Academy, 1882.

Rhumb Line. Mercator's Projection. Any straight line on the chart represents a rhumb line and indicates a particular mutual bearing of two places so connected. On the sphere such a line is known as a loxodromic curve, and it possesses the property of cutting the meridians at equal angles.—United States Coast and Geodetic Survey Report for 1880, Appendix No. 15, Page 6.

Rhumb Line. The curved line which joins any two places on the earth's surface, cutting the intermediate meridians at the same angle, is called a rhumb line. loxodromic curve, or equiangular spiral.—American Practical Navigator, Nathaniel Bowditch, LL. D. Revised by order of the Bureau of Navigation, Navy Department.

Rhumb Line. A rhumb line is a curve on the earth's surface cutting every meridian it meets at the same angle.—Theory and Practice of Navigation, by Henry Evers, LL. D.

Rhumb Line. A rhumb-line is a curved line on the earth's surface which cuts all the meridians which it crosses at the same angle; this is therefore the track described by a ship while she continues to sail on the same true course, and the length of this rhumb line is called the distance sailed.—Treatise on Navigation, Pryde.

Rhumb Line. The course of a vessel which cuts all the meridians at the same angle; called also the loxodromic curve.—Webster's Unabridged Dictionary.

[We think Capt. Pearsons really meant, in the communication referred to, that there are two methods of maintaining, projecting, or conceiving a rhumb-line, according as one uses it on magnetic courses. It has been remarked, since the last letter of Capt. Pearsons was printed, that he seems to want a chart issued for a purpose for which it never was intended. Whether this be true or not the chart should be considered as a convenience, or instrumentality, wherewith to practice the art of navigation. It is not a proper adjunct whereon to print theories of navigation, which can be more conveniently published in separate form, without danger of confusing results. It is assumed in issuing the chart to navigators, that they are sufficiently familar with the art to use the chart properly after noting its simple directions for measuring courses and distances.—ED.]

A NOTABLE ORE DOCK.

The accompanying illustration shows a view of the new ore dock No. 2, of the Duluth, Misabe & Northern Railway at Duluth, Minn. The old dock No. 1 is shown at the right, in which only the ore chutes can be seen. In the background the high trestle approach to the docks from the railway may be seen. The new dock is 1,152 feet long, 52 feet wide and 57 feet 8½ inches high above water. There are 192 pockets, with a capacity of 180 tons of ore per pocket, making in all a capacity of 34,560 tons. The illustration was taken before the completion of the work and shows the method of construction and framing of the structure, for which the American Steel Barge Co., are now furnishing the chutes. We are indebted to the Railway Review, Chicago, for the illustration.

The United States Steamship Michigan will be placed at the disposal of the Michigan Naval Reserves for use in July. The Detroit Division will have her for a week, and then the Saginaw Division will make a trip to Mackinaw. The Michigan is now equipped with two six-pound Hotchkiss and two six pound Driggs-Schroeder guns, beside a number of the Hotchkiss rapid-fire guns.

VISIBLE SUPPLY OF GRAIN.

As compiled for THE MARINE RECORD by George F. Stone, Secretary Chicago Board of Trade, May 23, 1896:

CITIES WHERE STORED.	WHEAT. Bushels.	CORN Bushels.	OATS. Bushels.	RYE. Bushels.	BARLEY Bushels.
Albany	.....	25,000	75,000	.....	.....
Baltimore	724,000	447,000	184,000	26,000	.....
Boston	265,000	184,000	6,000	.....	.....
Buffalo	1,249,000	325,000	292,000	132,000	116,000
" afloat	.....	.....	.....	.....	.....
Chicago	15,023,000	3,500,000	1,576,000	368,000	10,000
" afloat	.....	.....	.....	.....	.....
Cincinnati	9,000	2,000	28,000	1,000	26,000
Detroit	166,000	16,000	14,000	.....	2,000
" afloat	.....	.....	.....	.....	.....
Duluth and Superior	8,485,000	.....	167,000	171,000	192,000
" " afloat	.....	.....	.....	.....	.....
Indianapolis	40,000	13,000	.....	.....	.....
Kansas City	1,080,000	67,000	32,000	29,000	.....
Milwaukee	567,000	2,000	.....	379,000	31,000
" afloat	.....	.....	.....	.....	.....
Minneapolis	17,467,000	64,000	518,000	81,000	21,000
Montreal	474,000	34,000	413,000	6,000	56,000
New York	1,685,000	1,467,000	1,569,000	109,000	.....
" afloat	72,000	.....	137,000	8,000	20,000
Oswego	.....	23,000	.....	.....	5,000
Peoria	14,000	.....	127,000	2,000	.....
Philadelphia	285,000	42,000	189,000	.....	.....
St. Louis	699,000	216,000	34,000	1,000	.....
" afloat	.....	.....	.....	.....	.....
Toledo	355,000	98,000	17,000	106,000	.....
" afloat	.....	.....	.....	.....	.....
Toronto	30,000	17,000	93,000	.....	22,000
On Canal	1,544,000	50,000	1,401,000	77,000	106,000
On Lakes	917,000	1,270,000	711,000	30,000	334,000
On Mississippi	148,000	128,000	32,000	.....	.....
Grand Total	51,298,000	7,990,000	7,615,000	1,526,000	941,000
Corresponding date 1895	54,244,000	8,978,000	7,390,000	137,000	145,000

NO NEED FOR SPONSONS.

War ships of this government will no longer be disfigured by those ungainly excrescences on their sides known technically as sponsons, and hereafter will present the flush unobstructed sides of the merchant vessel. The necessity of wide arc of fire and room for the intricate mechanism of modern breech-loading rifles necessitated this superstructure projecting over the sides of all war ships, and not only were they expensive, but did not increase the efficiency of the battery or add to the appearance of the vessel. Naval Constructor Dashiell has worked out a scheme, through an ingenious method of constructing the gun carriage, so that sponsons will not be required nor the ports necessarily be increased in size. This has been accomplished by reducing the frontage of the carriage and in making the whole piece square in front with a rounded rear, instead of circular as before. His plan has been submitted to the leading experts of the department, approved, and will be introduced hereafter on all new ships, the first to be the new battleships Kearsarge and Kentucky. Two of the small 1,000-ton gunboats building north will also have the device applied, and the four new battleships will also be without sponsons. No other country has so far devised any means of doing away with the sponson, and this government, as in many other improvements in naval science, is the first to settle the perplexing question satisfactorily.—Army and Navy Register.

DOES NOT SHIPPING NEED PROTECTION?

To those of our readers who may be doubtful as to the need for some protection to American shipping in the struggle for commercial supremacy, and the advisability of the enactment of such a bill as is proposed by Senator Elkins, the following figures are submitted for inspection:

Tonnage of American and foreign vessels entered into seaports of United States from 1868 to 1895:

	American.	Foreign.	Total.
1868	2,465,695	3,105,826	5,571,521
1878	2,009,437	8,521,090	11,530,527
1888	2,913,998	10,042,161	12,956,159
1895	3,676,651	13,048,696	16,725,347

The following table shows the tonnage of British and American ships respectively, entered at seaports of United States:

	British.	American.
1868	2,348,201	2,465,695
1878	5,232,573	3,009,437
1888	6,673,122	2,913,998
1895	8,729,793	3,676,657

A new system of signaling has been adopted at the C. L. & W. ore hoists at Lorain. The usual practice is to pull a string which raises a target at the top of the hoists, where it can be seen by the engineers. At present the boss carries a small switch-board, which has two wires leading to a bell in the engineer's room in the house. A touch of the button and a system of signals does the rest. It is much safer, as well as more convenient, as the danger of accidents from mistakes in signals is minimized.

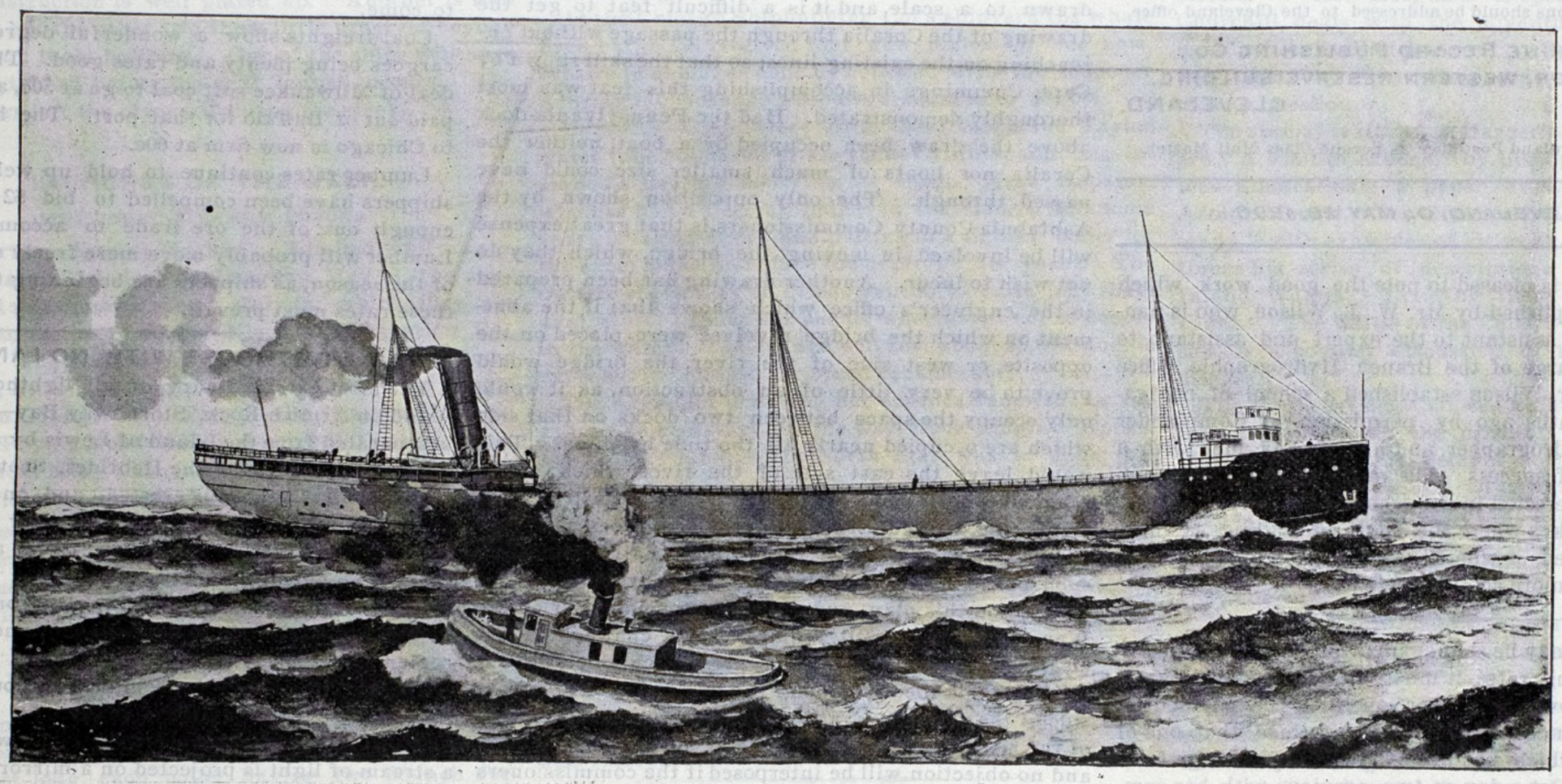
TRADE AND INDUSTRIAL NOTES.

The E. P. Allis Co., of Milwaukee, is engaged in filling orders for $100,000 worth of engines for the mines at Johannesburg and elsewhere in South Africa.

Wickes Bros., of East Saginaw, Mich., manufacturers of boilers, engines and heavy mill machinery, are building for Struthers, Wells & Co., of Warren, Pa., a set of their new vertical plate bending rolls, 10′ 3″ between housings, top roll 20 ″ diameter, and bottom rolls 16″ diameter. They are also building a set of vertical rolls for John Mohr & Son, Chicago, which are 10′ 3″ between housings, top roll 22″ diameter, and bottom rolls 17″ diameter. These rolls are designed for plates up to 1¾″ in thickness, and the tool will weigh complete 90,000 pounds.

The H. Channon Co., of 24-26 Market street, Chicago, has issued its treatise on rope transmission, which will be sent upon application. Rope driving has come into prominence as a factor in power transmission in recent years, and it will undoubtedly be read with interest by engineers and manufacturers everywhere. To employ rope driving successfully proper conditions are required, and the correct principles of design and construction must be observed. These points are explained with suitable tables and illustrations. The general catalogue of the H. Channon Co. is ready, and they will be pleased to send copies to firms interested in the line.

More than a dozen of the "Providence" yacht capstans in bronze and galvanized iron have been shipped to Great Britain within a short time for various yachts building there. One of these was placed in the yacht Samphire, designed and built by H. Sibbick, West Cowes, which yacht was the victor in the race in the Mediterranean recently, and others have been sold to Stow & Son, of Shoreham, and Pascall, Atkey & Son, of West Cowes. For more of these capstans were ordered by cable from Great Britain three weeks ago, and a very fine little vertical yacht windlass of bronze was shipped to Liverpool a short time since. The American Ship Windlass Co. have been very successful in introducing their yacht machines in Great Britain, as they manufacture yacht windlasses and capstans which are very light, neat and attractive in design and handsome in finish.



THE STEAMSHIP L. C. WALDO.

This picture shows one of the additions made by F. W. Wheeler & Co., of West Bay City, to the fleet of 1896, the steamer having been built to the order of the Roby Transportation Co. The Waldo has been rather unfortunate, having incurred some damage on her second trip down, through collision with the steamer Choctaw, at the Sault, the latter ship, however, having got the worst of it. We beg to acknowledge the courtesy of Seaboard for use of cut.

FLOTSAM AND JETSAM.

The City of the Straits will be placed on the Cleveland-Toledo route about June 10.

The House Committee on Commerce will report favorably on the bill establishing a life-saving station at Charlevoix, Mich.

The Michigan Tug & Towing Co., has been made a party defendant in the libel of the Holland & Emery Lumber Co., vs. the tug Gladiator, for the loss of $8,687 worth of logs on Lake Huron in 1893.

Capt. Joe Rouleau, of Sault Ste Marie, on Saturday night, May 16, piloted the steambarge Schoolcraft, with three schooners in tow, safely through the St. Mary's river. This was the first time a tow has been taken through the river at night.

When the steamer Byron Whitaker was off Whitefish Point in the gale of Sunday the 17th, her steering gear gave completely away off the rudder post. A small piece of wood was with difficulty placed in position as a tiller and was worked by tackle, and she got safely to Waiska Bay with her consorts.

Capt. Daniel Wall, of the steambarge Francis Hinton, is one of the few masters on the few masters on the lakes that ascertains the deviation of his compass by the azimuth tables and corrects his chart courses for the magnetic variation, and this deviation, which he tabulates, to obtain compass courses, courses to be steered by compass. He also frequently takes compass bearings of prominent points and from them plots the position of his boat on the chart.—Sturgeon Bay Advocate.

STEEL VS. IRON.

Such a scare in favor of iron ships as against steel has taken place in Great Britain that some owners' superintendents on new steel vessels are now specifying a large portion of the work to be of iron, such as upper decks, tank tops, etc. A steel manufacturer has informed London Fairplay, however, that some time ago he made a number of experiments to test whether it really was the case that steel corroded more quickly than iron The experiments were carried out by means of plates of various thicknesses being exposed in both fresh and salt water for periods from one month up to a couple of years, with the result that the steel plates exposed for a period up to six months corroded much faster than the iron ones, but after that the advantage lay with the steel, those exposed for two years being in a much better condition than the iron ones. Another thing learned was that ships built of steel within the last few years do not show the same inclination to corrode, from the fact that the manufacture of steel is better understood.

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THE RECORD is pleased to note the good work which has been accomplished by Mr. W. J. Wilson, who is nautical expert and assistant to the expert and assistant to the officer in charge of the Branch Hydrographic Office in Chicago. Mr. Wilson established a school of navigation some months ago by permission of Commander Sigsbee, the Hydrographer, and has already met with a good measure of success. The yachtsmen of Chicago are particularly interested in the school, and there are few places on the lakes where the sport of sailing is more warmly cherished, or where the innovation of the steam-yacht has been more coolly greeted.

WHATEVER may be said against the fairness of underwriters in fixing rates, it must be admitted that great leniency is shown in connection with the payment of losses. THE RECORD is reliably informed that one of the steamers which has received a heavy damage from stranding left port a day or two previous with her compasses badly out of adjustment, nothing having been done to them this spring. Her master had advised the owners of this state of affairs, but the latter refused to allow him to incur the necessary expense of having the adjusting done. This, if proven, would clearly invalidate the insurance under the general terms of the policy; yet, while there is little doubt that the facts are known to more than one agent, the loss will probably be paid just the same.

WHETHER justly or not, the White law is blamed, with great unanimity on the part of masters who have been discussing the Sunrise-133 collision, with being the cause of this casualty. The old law prescribed different fog signals for steamers traveling alone and those having barges in tow. This collision certainly brings up again the question as to whether inspectors are sufficiently rigid in their requirements as to the quality of the bells placed on barges for the purpose of fog signaling. A suit has grown out of the collision, and while the courts will not be assisted materially in determining the blame, the evidence brought out on trial will without doubt be listened to and read with interest by all having this subject at heart, as demonstrating whether fog bells are as useful on all occasions as would have been a warning signal from the steamer. The claim on the steamer in the libel is that the bell on the barge was not rung. The crew of the barge will certainly swear that the bell was ringing, and here is where the court will have to express an opinion as to the facts.

THE BRIDGE HEARINGS.

The Toledo bridge hearing has not yet come to anything, because of the apathy shown by all parties in regard to it. At Lorain the War Department has decided, upon the recommendation of Col. Jared A. Smith, that the Nickel Plate bridge is not an obstruction to navigation. Col. Smith's position in all these hearings is judicial, and he could not recognize the bridge as an obstruction until it had actually proven so. According to the evidence produced the beam of the largest boat that ever passed through the draw was less than half the width of the draw, and the Lorainites were figuring entirely on the future. This, however, leaves the case without prejudice, and when large vessels begin to go to the Johnson Steel Co.'s docks, and fail to get through the draw without great difficulty, the matter can again be taken up.

In the matter of the drawbridge over the river at Bridge street, Ashtabula Harbor, Col. Smith has given a hearing, as was noted last week, but no recommendation has been sent to the War Department. A part of the evidence at the hearing was that the Coralia just managed to squeeze through the draw, going up the river, while the steamer Saxon was lying at the P. Y. & A. coal dock on the west side of the river, just below the bridge. Drawings have be prepared in the U. S. Engineer's office, Cleveland, with the river and the boats drawn to a scale, and it is a difficult feat to get the drawing of the Coralia through the passage without enroaching on the existing lines; so that the skill shown by Capt. Cummings in accomplishing this feat was most thoroughly demonstrated. Had the Pennsylvania dock above the draw been occupied by a boat, neither the Coralia nor boats of much smaller size could have passed through. The only opposition shown by the Ashtabula County Commissioners is that great expense will be involved in moving the bridge, which they do not wish to incur. Another drawing has been prepared in the engineer's office which shows that if the abutment on which the bridge revolves were placed on the opposite, or west side of the river, the bridge would prove to be very little of an obstruction, as it would only occupy the space between two docks on that side which are occupied nearly all the time by ships. This would leave the east side of the river, which is the inner side of the bend, practically free from obstructions. While the United States government does not take upon itself to say where the bridge shall be placed in such a case, it is probable that a compromise will be effected on this plan, and that the formal order of the War Department will require that a channel be left clear equal to the width of the present channel, but extending from the east side of the bridge pier on the east side of the river, thus allowing space on the west side of the river equal to the diameter of the bridge pier; and no objection will be interposed if the commissioners remove the bridge pier across the river. This will reduce the expense to a minimum, and still provide an excellent channel at that point for some years to come.

AMERICAN MERCHANT MARINE NEEDED.

Reciprocity treaties undoubtedly lead to close relations with those countries with which we enter into commercial advantages, but after all we have been for years embarrassed by not being in possession of a merchant marine service, and until the latter is encourged by our people upon the basis of a gratuity of some sort —term it subsidy if you like—we will never be able to accomplish the objects involved in reciprocity. The American ship carrying goods from New York or from any port in the United States to any foreign country can be regarded almost as I would regard a salesman that is traveling throughout the country or world in our interest. Jointly with a marine service we also must establish mutual banking facilities; they are collateral necessities.—Geo. J. Seabury, New York.

THE USE OF PAPER SAILS.

It is claimed that paper sails are meeting with considerable favor. They are considerably cheaper than canvas sails, and owing to a special treatment are made as soft, flexible and untearable as the original article. To the paper pulp is added fat, a solution of alkali silicate, glue, alum and potassium bichromate. From this, by means of a paper-making machine, a fairly thick paper is produced. Two strips of this are pasted together, and by passing under considerable pressure through rollers a very thin soft sheet of paper is formed. It is then passed through a weak solution of sulphuric acid, which has the effect of converting the upper surface into a species of parchment. Washing with a solution of soda, drying and glazing follow. Care is taken to leave the edges free when the strips of paper are fastened together so that other strips may be added at the sides, thus forming a sufficient breadth of sails. To fasten the strips together a paste is used which contains the same ingredients as those added to the paper pulp, while by inserting cords of ribbon on the sides the edging of the sail is formed. There are few articles which offer a greater field for ingenuity than that of paper.

THE FREIGHT SITUATION.

The last week's slump in freights was only temporary has already been proved by the partial reaction which has already occurred. The ore rate from the head of Lake Superior went to 95c under the general pressure, but the Marquette rate remains at 80c and the Escanaba is firm at 55c. The corn rate out of Chicago, which is again on the advance, with 1¼c paid Wednesday, will soon lend strength to the Escanaba freight, which, if grain continues firm, will undoubtedly advance. The Duluth which rate is off to 2⅝c and is weak at that; but the time of year has arrived when wild boats will cease to depend upon wheat cargoes for two or three months to come.

Coal freights show a wonderful degree of activity, cargoes being plenty and rates good. There is a good deal of Milwaukee soft coal to go at 50c, and 55c is being paid out of Buffalo for that port. The hard coal rate to Chicago is now firm at 60c.

Lumber rates continue to hold up well, and Duluth shippers have been compelled to bid $2 to get boats enough out of the ore trade to accommodate them. Lumber will probably move more freely during the rest of the season, as shippers are beginning to realize that these rates must prevail.

A LIGHTHOUSE WITH NO LANTERN.

The most extraordinary of all lighthouses is to be found on Armish Rock, Stornoway Bay—a rock which is separated from the Island of Lewis by a channel over 500 feet wide. It is in the Hebrides, Scotland. On this rock a conical beacon is erected, and on its summit a lantern is fixed, from which, night after night, shines a light which is seen by the fishermen far and wide. Yet there is no burning lamp in the lantern and no attendant ever goes to it, for the simple reason that there is no lamp to attend to, no wick to trim, and no oil well to replenish.

The way in which this peculiar lighthouse is illuminated is this: On the island of Lewis, 500 feet or so away, is a lighthouse, and from a window in the tower, a stream of light is projected on a mirror in the lantern on the summit of Armish Rock. These rays are reflected to an arrangement of prisms, and by their action are converged to a focus outside the lantern, from where they diverge in the necessary direction." The consequence is that, to all intents and purposes, a lighthouse exists which has neither lamp nor lighthouse keeper, and yet which give as serviceable a light—taking into account the requirements of this locality—as if an elaborate and costly lighthouse, with lamps, service room, bedroom, living room, storeroom, oil room, water tanks, and all other accessories were erected on the summit of the rock.

NEWLY ENROLLED TONNAGE.

Following is a list of lake vessels to which official numbers and signal letters have been assigned by the Commissioner of Navigation, for two weeks ending May 16:

Official No.	Rig.	Name.	TONNAGE. Gross.	Net.	Home Port.	Where Built
107,222	Schr.	Algeria	2,038.66	1,917.68	Port Huron	W. Bay City
161,768	Schr.	Vinland	965.12	873.02	Port Huron	Algonac
161,767	St. s.	Vigilant	372.09	253.03	Buffalo	Port Huron
34,247	Bge.	Carbonate	94.07	97.07	Buffalo	Buffalo
36,865	Bge.	Eleanora	225.70	225.70	Buffalo	Buffalo
127,133	St. s.	Chief	10.35	7.04	Duluth	Duluth
136.545	St. s.	Edna G.	154.15	67.44	Duluth	Cleveland
145,718	St. s.	T. C. Lutz	136.26	70.32	Chicago	Chicago

Work on the steamer Britannic, wrecked last fall in the Detroit river, is being rapidly pushed at Marine City by M. P. Lester. She has been entirely rebuilt.

SHIP BUILDING AND REPAIRS.

ANOTHER NEW CONTRACT.

While the contract has not been made public, THE RECORD is informed that the contract has been awarded to a Cleveland shipyard for a new steel steamer to be completed by next spring. The new steamer will be about 375 feet in length by 45 beam, the prospective owners considering that the 400-foot boats are as yet a little too large for convenient handling. The contract will not be officially announced for some little time.

Riebolt & Wolter are progressing steadily with the construction of their shipyard at Sturgeon Bay. From thirty to forty piles are being driven each day, and soon enough work will have been done to allow of operating the floating dry-dock. Then the dredge will begin work to construct the new stationary dock.

A small tug was launched last week at Fish Creek, Wis., for Hill Bros.

The Effie B, the new steamer lately launched at Ashtabula, is getting her machinery. Her boiler was built by the Bay State Iron Works, Erie, Pa.

The first of the car ferries, built at Toledo, was slightly stove in at her launching and had to be docked. The launch of her sister barge is expected daily.

At the South Chicago Shipyard one of the four vessels under construction is well plated up. Another is well in frame, but the other two show little progress beyond the work on their bottoms. One of the ships will have to be lengthened before the next launch occurs. The George Orr left the shipyard during the week.

LAUNCHES OF THE WEEK.

SIDEWHEEL STEAMER CORONA.

The Bertram Engine Works Co., Limited, of Toronto, launched at 11:20 o'clock on Saturday, May 23, the steel sidewheel passenger steamer, Corona, which they are building to the order of the Niagara Navigation Co., Limited. The Corona was christened, as she slid down the ways, by four little girls—Misses Clara Foy, daughter of Gen. Mangr. John Foy, of the Niagara Navigation Co.; Phyllis Hendrie, daughter of William Hendrie, of Hamilton; Mary Osler, daughter of E. B. Osler, and Minnie Cumberland, daughter of Barlow Cumberland.

The Corona was built to take the place of the Cibola, which burned at her dock, Lewiston, N. Y., last season. She is much after the style of the Chippewa, of the same line, but is not quite so long. Her dimensions are as follows. Length over all, 277 feet; keel, 270 feet; beam, moulded, 32 feet; over guards, 59 feet; depth, moulded, 13½ feet. Her engine is of the compound inclined type, with cylinders 45 and 85 by 66 inches. Her boilers are six in number, of the gunboat type, 8 feet in diameter and 16 feet long, each boiler having two 36-inch furnaces. Forced draft is provided by means of two 90-inch steel fans with direct connected engines. Her wheels are of the feathering type, 20 feet 6 inches in diameter, with 9 feet 8 inches face. The general designs were made by Mr. A. Angstrom, engineer and manager, who was formerly with the Cleveland Ship Building Co. The Bertram Engine Works Co. built the hull and installed the machinery, but the finishing work of the cabins will be done by the Niagara Navigation Co. The Corona was built under the inspection of Mr. A. P. Rankin, of Toronto.

STEEL LUMBER STEAMER ARAGON.

The Detroit Dry-dock Co., launched at Wyandotte last Saturday afternoon, the steel lumber steamer building for C. R. Jones and others of Cleveland. She will be the largest lumber carrier on the Great Lakes having a capacity of nearly 1,800,000 feet. Her owners have great faith in the future of the Lake Ontario trade, and she is built with an especial view to good cargo capacity of at least 14 feet draft. She was christened the Aragon, and is 256 feet long over all, 240 feet on keel, 42 feet beam, and 17 feet moulded depth. Her engine is triplex, 17,27½ and 46 by 36 inches, and she has one boiler, 12½ by 12 feet, tested to 170 pounds working pressure.

The Aragon is built without a water bottom, but her steel bottom is sheathed with wood, and the absence of water bottom will thus not increase the rate of her insvrance. Her engines have already been partially erected at the Dry-Dock Engine Works, and will be put in without taking down. This will save much time, and the boat will be in commission by June 25.

GENERAL REPAIR WORK.

CLEVELAND.—The L. C. Waldo is at the Cleveland shipyard for repairs. Capt. C. M. Davis, of Milwaukee, for the underwriters, and Robert Logan, for the owners, held a survey Tuesday. She will require sixteen new plates and considerable new stem. It will require at least two weeks to make repairs, as the Waldo is steel riveted, and the cutting out process goes on very slowly.

At the Cleveland dry-dock the repairs to the schooner F. C. Leighton were completed. The tug H. L. Chamberlin went in for a new wheel, and while in dock received some new bulwarks and sheer strake.

At the Ship Owners' dry-dock the steamer Swain was put in to have a leak stopped; after which she was again floated. Her rebuild is already well under way. The Quito was in and had her butts overhauled and some calking done. The Three Brothers had a leak stopped, and the little tug yacht E. M. B. A., which was squeezed by the City of Buffalo Tuesday evening, had some refastening done and carlins renewed. The Rhoda Emily, Siberia and Tasmania are booked for the dock.

CHICAGO.—At Miller Bros.' shipyard the steamers Ivanhoe, Albert Soper and Macatwa are in drydock for overhauling and repairs.

At the Chicago Shipbuilding Co.'s shipyard the whale back barge 133 received four new plates on her bow, repairs to damages done by collision with the schooner Sunrise. The Onoko's repairs amounted to $3,000.

DETROIT.—Commodore Mills has taken the Taylor water tube boiler out of his yacht Cynthia, and has installed a Deering boiler in its stead. Mark Hopkins, who has had a Deering boiler in the Bonita for some years is taking it out and putting in a lighter boiler of the same make, to reduce the draft of his yacht. The owners of the City of Toledo expect to raise her shaft next winter so that her paddle wheels will not so deeply in the water. The change will cost about $5,000, and is expected to increase her speed considerably.

The Argonaut is having her engines renewed, as far as may be necessary, by the Dry Dock Engine Works.

WEST SUPERIOR.—The North Star was in dock this week for permanent repairs to the damages incurred y striking the dock at Detroit. She will require three or four plates, three frames on each bow, and gusset frames. The Weed finished her repairs last week, and is again in commission. The Moran will receive more extensive repairs than have been put on any boat up to date. Her inside will all be torn out, and her between-decks thoroughly overhauled, in addition to her insurance repairs. Repairs will consume about a month, and her bill will foot up about $20,000. Barges 100 and 129 also received minor repairs at the dock.

IMPROVED DIVING APPARATUS.

Andrew J. Morse & Son, No. 140 Congress street, Boston, have just issued a new catalogue calling attention to the firm's new submarine armor. The main improvement consists of the helmet, which is made of tinned copper, with all mouldings in gun metal, and made up on an iron form. This holds the helmet in shape, prevents cutting the shoulders, and allows the diver to work in any practical position. With each diving helmet is furnished the Morse safety valve, by the use of which the air, having entered the helmet, cannot escape back through the air hose, and should the latter meet with accident, the air is retained in the helmet. The helmet is also provided with a new regulating escape valve, by which the diver controls the escape of air, and which works automatically at the desired pressure; also also a recessed gasket seat, to prevent the gasket from spreading; and safety-lock, to prevent the helmet from accidentally becoming unscrewed.

STILL AFTER DAM LGEISLATION.

Congressman Griswold, of Erie, has not abandoned his scheme of raising lake levels by means of dam. He has introduced in the House a joint resolution appropriating $150,000 to enable the Secretary of War to have surveys made of the outlets of lakes Erie, St. Clair, Huron, and Superior, one-third of the sum being made immediately available.

A 50-inch fan has been placed in the lake tug J. C. Perrett to increase her steaming abilities.

JUNE MAGAZINES.

There are two papers in the June number of the Century that are of particular interest in conjunction with the approaching convention at St. Louis, one being by Dr. Albert Shaw, entitled "Notes on City Government in St Louis," the other by Joseph B. Bishop on "Humor and Pathos of Presidential Conventions" The second of Mr. James Bryce's "Impressions of South Africa" takes up the race question. Mr. Bryce describes the differences that arose between the Boer farmers and the govenor of the Cape Colony, the great *trek* into the Transvaal, and the first interference of Great Britain in the affairs of the Boer Republic. Interest attaches to the paper on "Lights and Shadows of the Alhambra," by Mrs. Elizabeth Robins Pennell, wife of Joseph Pennell, the artist, by whom it is fully illustrated. Mrs. Pennell gives a vivid impression of the Alhambra in midsummer, including the life of the people and the delights and hardships of the tourist. Prof. Sloane's "Life of Napoleon" takes up the Austrain marriage, the birth of the King of Rome, and the disastrous Russian campaign. There is an article on "Sargent and His Paintings," with particular reference to his Boston Public Library decorations. The text is by William A. Coffin, and many of Sargent's pictures are reproduced, including two woodcuts by Cole. In the way of fiction there are two short stories besides the serials. "Mr. Keegan's Elopement," by Winston Churchill, deals with the adventures of an American naval officer at Funchal, and "Sayings and Doings of the Todds," by Viola Roseboro', with a phase of the woman question.

The special features of Harper's Magazine for June are "A Visit to Athens," by Bishop Doane, with thirteen illustrations; a paper by Charles Waldstein on Adolph Menzel, "The Greatest Painter of Modern Germany," with examples of his work. Howard Pyle continues his series of descriptions of a trip "Through Inland Waters," picturing Lake Champlain and the canal. "The Battle of the Cells," by Dr. Andrew Wilson, is a popular discussion of the germ theory of disease.

The single article, "On the Balkans." by Henry Norman, is well worth the price of the June number of Scribner's Magazine, being a most practical discussion of the Eastern question. Other features of the number are Isobel Strong's story of the life in Samoa of Robert Louis Stevenson. The series of articles on "The Evolution of the Trotting Horse," by Hamilton Busby continue with unabated interest. The serial story by J. M. Barrie, "Sentimental Tommy," grows in fasination for the readers, and the entire issue is most attractive.

The Arena celebrates the opening of its sixteenth volume by appearing in a new dress of type. It is an unusually strong number, opening with a brilliant paper by Rev. Samuel Barrows, D. D. on "The First Pagan Critic of Christian Faith and His Anticipation of Modern Thought." Justice Clark continues his papers on Mexico, and the silver question is given its usual prominence in "A Proposed Platform for American Independents for 1896," by the president of the Mercantile National Bank, of New York, and "Bimetallism," by Mr. A. J. Utley. Prof. Parsons, of Boston University Law School, continues his masterly papers on the "Government Control of Telegraph." Editor Flower writes in a captivating manner of Whittier as the "Poet of Freedom" and a fine portrait of the Quaker poet forms the frontispiece to the number.

NOTICE TO MARINERS.

PILOT ISLAND RANGE LIGHTS.

Notice is given by order of the Lighthouse Board that, on or about June 4, 1896, the color of each of the lights of this range, located on the S. side of Mud Lake, St. Marys River, will be changed from red to white. No other change will be made.

MARINE RECORD DIRECTORY.

THE MARINE RECORD DIRECTORY of MASTERS and ENGINEERS is now on sale. It is an attractive book of about fifty pages, of convenient size for the pocket. The names of ships are alphabetically arranged, with their masters and engineers, and the names of the latter are also arranged alphabetically, with the boats on which they are engaged. Sent to any address on receipt of 25c.

NEW INVENTIONS.

Capt. Alex McDougall. nf the American Steel Barge Company, West Superior, has obtained a patent (No. 560,362) on a Hatch Coaming, for which he filed application nearly a year ago. The claim is as follows:

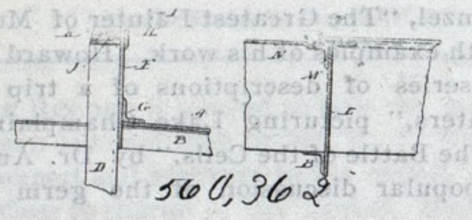
1. The combination with a vessel having vertical stanchions arranged on each side of the line of hatches and extending above the main-deck, of vertical hatch-coamings secured to said stanchions above the main-deck, and removable hatch-covers adapted to be bolted to said hatch-coamings.

2. The combination with a vessel having vertical stanchions arranged on each side of the line of the hatches and extending above the main-deck, of vertical hatch-coamings secured to said stanchions above the main-deck, elevated decks mounted on said hatch-coamings with spaces between them, and removable hatch-covers adapted to be bolted to said hatch-coamings between said elevated decks.

3. The combination with a vessel having vertical stanchions D, arranged on each side of the line of the hatches and extending above the main-deck, of vertical plates F, F secured to said stanchions above the main deck, angle-irons G, G at the joint of said plates and the main-deck, angle-irons H, at the upper edge of said plates, and removable hatch-covers O adapted to be bolted to said angle-irons H.

4. The combination with a vessel having vertical stanchions D, arranged on each side of the line of the hatches and extending above the main-deck, of vertical plates F, F secured to said stanchions above the main-deck, angle-irons G, G at the joint of said plates and the main-deck, angle-irons H, at the upper edge of said plates, angle-irons J, on the inside of said plates, and bearing on the upper ends of the stanchions D and removable hatch-covers O, adapted to be bolted to said angle-irons H.

5. The combination with a vessel having vertical stanchions D, arranged on each side of the line of the hatches and extending above the main-deck, of vertical

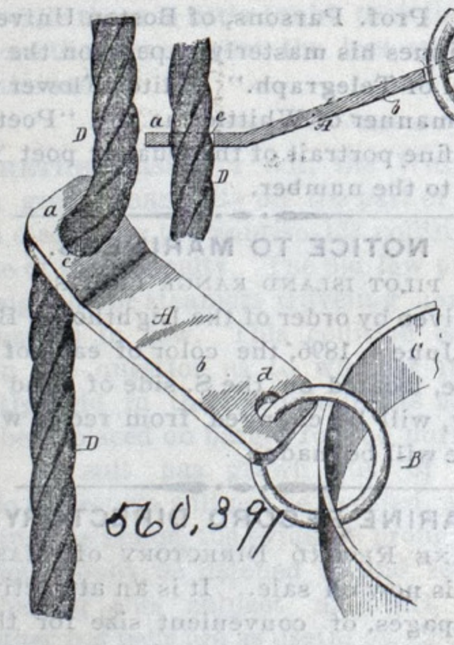


plates F, F, secured to said stanchions above the main-deck, angle-irons G, G, at the joint of said plates and the main-deck, angle-irons H at the upper edge of said plates, angle-irons J, on the inside of said plates, and bearing on the upper ends of the stanchions D, wooden pieces K secured within said angle-irons J, and removable hatch-covers O, adapted to be bolted to said angle-irons H.

6. The combination with a vessel having vertical stanchions D, arranged on each side of the line of the hatches and extending above the main-deck, of vertical plates F, F, secured to said stanchions above the main-deck, angle-irons H, at the upper edge of said plates, liner-irons I on said angle-irons H, plates L, at the front and rear of the hatches, angle-irons M at the upper edge of said plates L, elevated decks N secured to said angle-irons H and M, and removable hatches adapted to be bolted at their edges to the elevated decks N and liner-irons I.

Patent No. 560,391 covers a Life-Line,or Safety Device invented by Richard S. Checkley, New York. The claim is as follows:

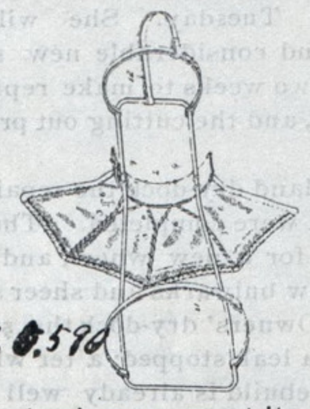
1. A block or check consisting of a plate bent out of a straight line and provided with a hole at or near each



end, one to receive a rope and a fastenlng device in the other for the attachment of the block or check to the body.

2. The combination with a block or check bent out of a straight line and having a hole therein at or near each end, of a rope passed through one hole, a ring in the other hole, and a belt or band passed through the ring.

William Luce, of Nehalen, Ore., has invented a Swimming Device (Patent No. 560,590),) comprising a frame equipped with suitable harness for attaching the device to the limb, a semi-circular band attached to the frame,



a series of ribs each having an eye at its outer end, oppositely deflected portions and bent ends at its inner end, which bent ends are looped into openings in primate relation to one edge of the said supporting band and a web attached to the said ribs and having its outer edge corded and secured to the eyes at the outer extremities of the ribs. The structure is adapted to be folded for convenience of carriage.

NOTICE TO MARINERS.

LITTLE TRAVERSE LIGHT STATION.

Notice is given by the Lighthouse Board that on or about June 1, 1896, a fog bell will be established at this station, on the extremity of Harbor Point, N. side of Little Traverse Bay, E. side of Lake Michigan, to be struck by machinery a double blow every 30 seconds, during thick or foggy weather.

The bell is suspended in the upper part of a small, square, pyramidal, wooden tower, 20 feet high, painted buff, with red roof, and standing about 190 feet SE. ½ S. from the light tower.

TWENTY-FOOT CHANNEL IN LAKE ST. CLAIR.

The following notice has been issued by Commander Folger, of the Eleventh Lighthouse District: The 20-foot channel being open to navigation from Windmill Point to buoy No. 16, the Grosse Pointe lightship No. 10 has been placed to mark the edge of the cut on the east side near the buoy. Sixteen white lights are shown from the three pile clusters recently driven by the Lake Carriers' Association on the east side of the southwest entrance. Vessels using this channel are requested to pass on the west side, in order not to interfere with the sweeping on the east side. The Grosse Pointe beacon light has been discontinued.

NOTES FOR NAVIGATORS.

The work of removing the shoals near Crossover light-house, St. Lawrence River, has begun. Drilling and blasting are in progress on the Hog's Back, and on another reef near the Whale's Back.

The new Ferris wheel on the north side, Chicago, will be a mark for sailors day and night. The wheel will be lighted by 3,000 incandescent lights from dusk to midnight daily, Sundays and holidays included, regardless of the condition of the weather.

The Hydrographic Office Bulletin for May contains a fine sketch-chart of Mud Lake and Little Mud Lake, on a large scale, with all ranges, depth of water, etc., very clearly outlined.

The ranges and beacons about which so much complaint is being made by Duluth tug men, should not be confounded with the buoys, which mark the channel, and which are in their proper places.

According to Dr. G. Schatt, who has been making a special study of ocean waves, their speed in a moderate breeze is 16.8 miles per hour. Their size and speed increase proportionately to the velocity of the wind. In a strong breeze they increase to 260 feet in length, and reach a speed of 36 feet per second. In heavy storms their length increases to 400 feet, and the speed to 28 miles an hour. Dr. Schatt does not think that the maximum height of the waves is very great; his maximum is just 32 feet. He believes that in great tempests waves of more than 60 feet are rare, and that even those of 50 feet are exceptional. In the ordinary trade winds the height is 5 or 6 feet.

The first ore cargo of the W. D. Rees was 4,487 gross or 3,886 net tons, loaded at Two Harbors.

GRAPHITE IN ELECTRICAL INDUSTRIES.

Graphite, whith is one of the forms of carbon, ahd more generally known as plumbago or black lead, has come to be an important factor in eleotrical industries. It is a graphite crucible which is used for electrical smelting, and it is a graphite pencil or rod which is used as an electrode in the process of electrical smelting. It is graphite pulverized to an impalpable powder that is used in electrolytic work by the copper smelters. Pure flake graphite is also used for lubricating cylinders and bearings of engines and dynamos, and the same material also forms the pigment for protective paints for trolley poles, electric light poles, and roofs of dynamo plants and trolley car sheds. Graphite would therefore seem to be a very important factor in electrical industries. During the last year or two the demand has very greatly increased for graphite resistance rods. Unlike German silver, it is not necessary to take into account the factor of quantity. For instance, a six-inch rod one-fourth inch in diameter may be made to have one ohm resistance or 10 ohms, or 1,000 ohms, or in fact almost any resistance that the electrician may require. The only reason for changing the dimensions of such rod would be either convenience, or for radiating the heat when it is necessary to carry a current of considerable quantity at high resistance. The Joseph Dixon Crucible Co., of Jersey City, N. J., which was the originator cf the graphite industry, and is now the most extensive miner, manufacturer and importer of graphite, has paid particular attention to the requirements of electrical engineers and is supplying the electrical industries with large quantities of material.

THE LAKE SUBMARINE BOAT.

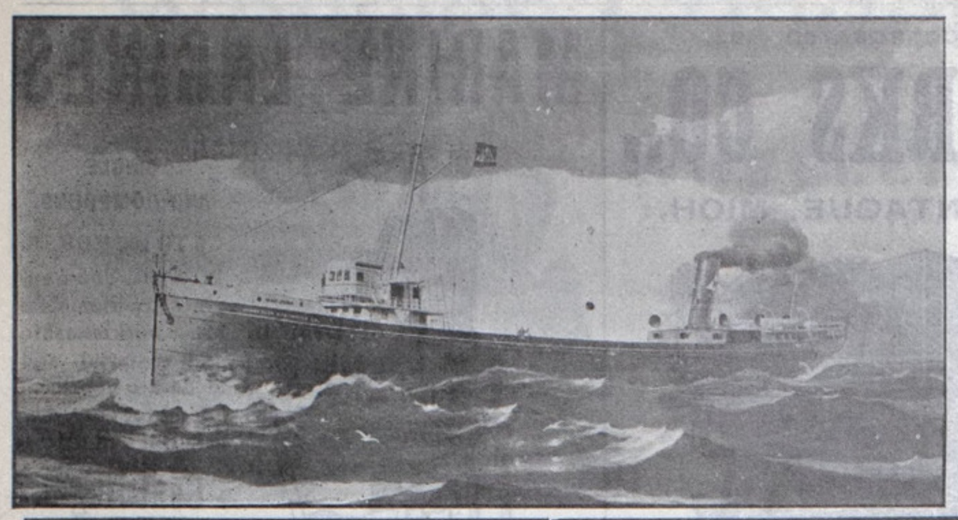
A company has been organized in Baltimore to build a submarine boat of a type invented by Simon Lake. The corporation is to be known as the Lake Submarine Co., and if the efforts of its promoters to obtain money for the enterprise are successful the boat will very probably be built by the Columbian Iron Works, of Baltimore. The design has special reference to a vessel for raising wreckage and also for discovering coral sponge and other valuable submarine deposits. The boat will be cigar-shaped and of steel. It will be propell d by steam on the surface and by electricity from storage batteries under the surface. According to the plans, it will be possible to work it at a depth of 150 feet. The trial vessel will be about 40 feet long and 10 or 15 feet in diameter. It is to be made small in ord r to be transported easily to Europe on a steamer after a trial in the port of Baltimore. It will carry a crew of six men, and will be capable of staying on the bottom forty hours without renewing the air. Wm. T. Malster is financially interested in the boat.

PROPOSALS.

U. S. ENGINEER OFFICE, 1637 Indiana Ave , Chicago, Ill., May 26, 1896. Sealed proposals for dredging at entrance to Calumet Harbor, Ill., will be received here until 12, noon, June 9, 1896, and then publicly opened. Information furnished on application. W. L. MARSHALL, Maj. Engineers. 22-23

U. S. ENGINEER OFFICE, 213 Woodward Ave., Detroit, Mich., May 19, 1895. Sealed proposals for furnishing all labor, materials and appliances for (E) widening channel below Islands at Little Rapids; (F) widening channel at angle, foot of Hay Lake; and (G) widening channel from dike to angle at Little Mud Lake, will be received here until 2 p. m., June 18, 1896, and then publicly opened. Information furnished on application. G. J. LYDECKER, Lieut. Col. Engineers. 21-24

OFFICE OF THE LIGHTHOUSE ENGINEER, 7TH AND 8TH DISTRICTS, 349 Carondelet Street, New Orleans, La., May 11, 1896. Proposals for the erection of eight square and seven triangular beacons for lighting the Mobile Ship Channel, Ala., will be received at this office until 12 o'clock M. June 8, 1896, and then publicly opened. Forms of proposals, plans and specifications showing what is required, can be had or seen by applying to this office. JAMES B. QUINN, Major and Lighthouse Engineer. 21-24



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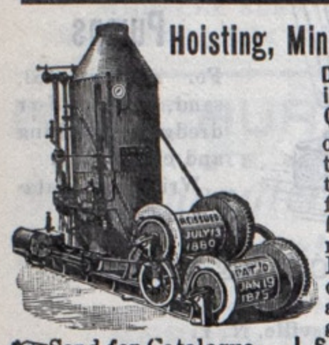

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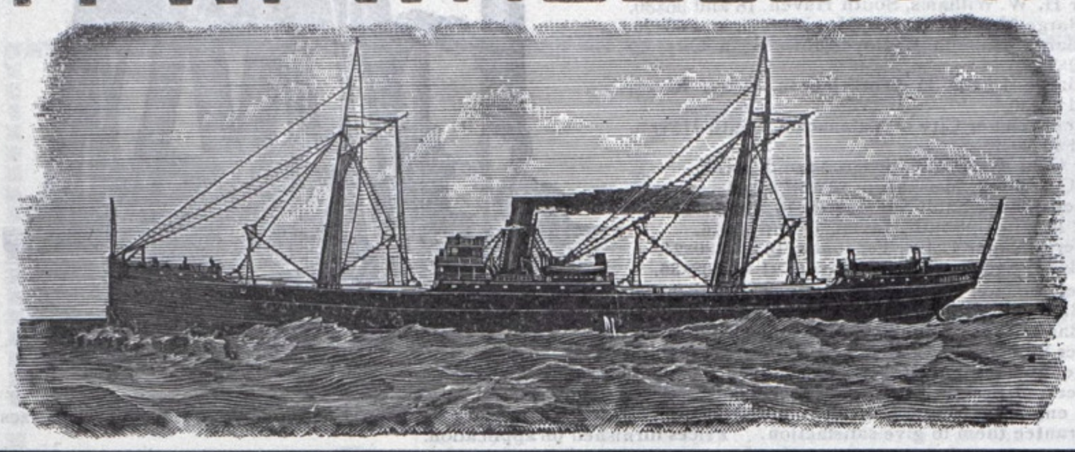

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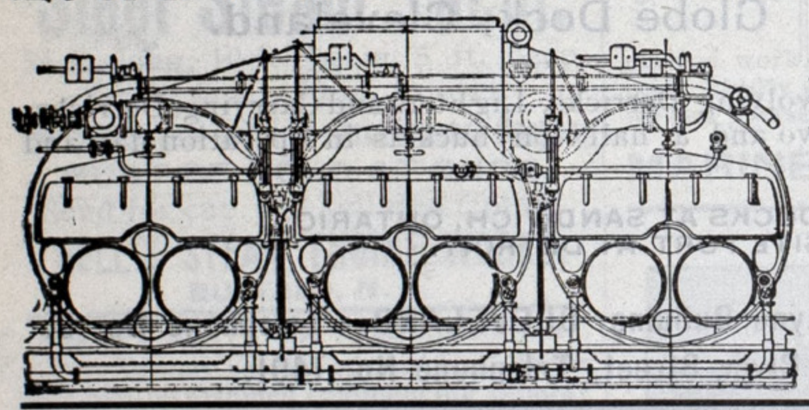

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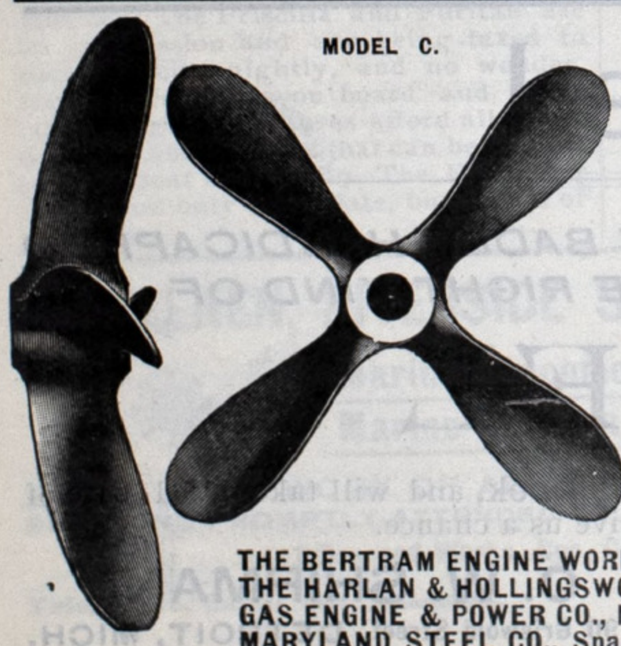

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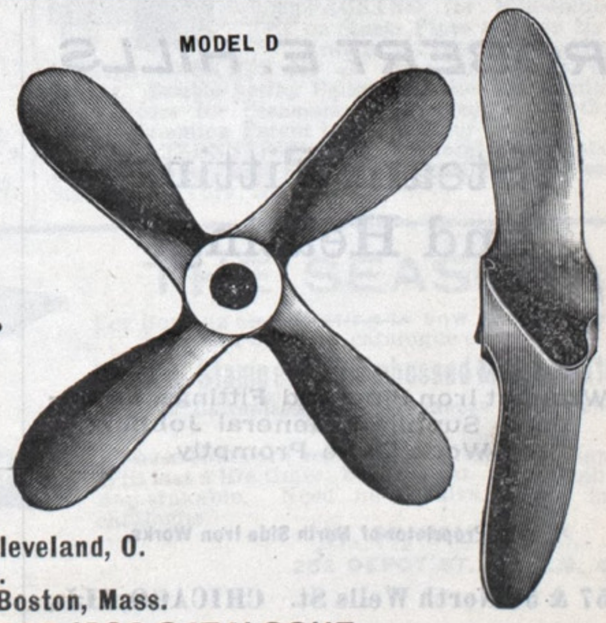

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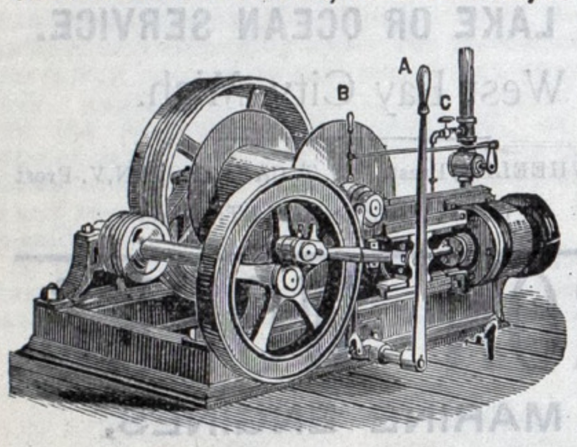

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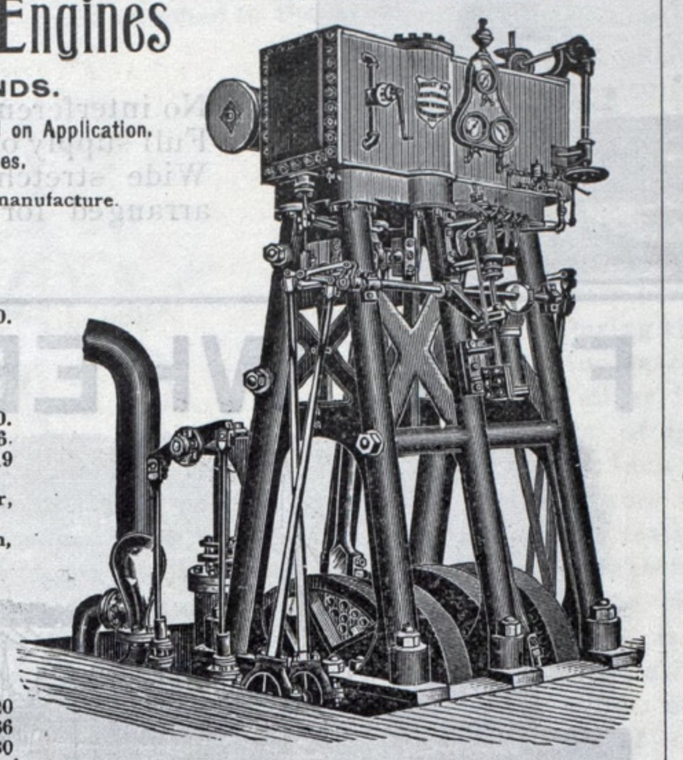

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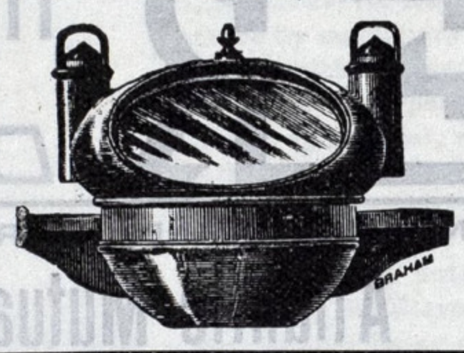

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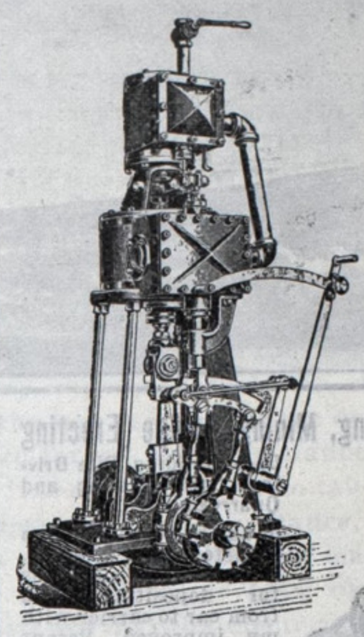

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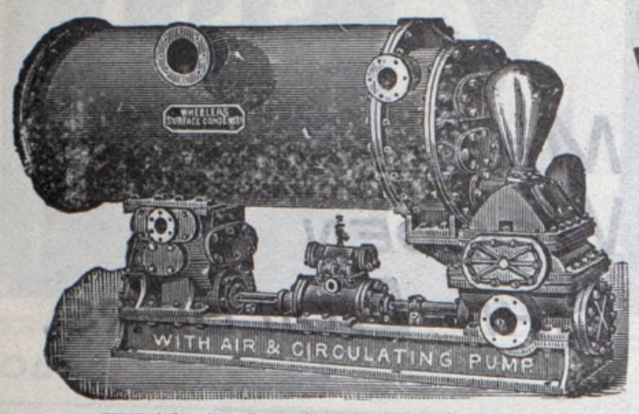

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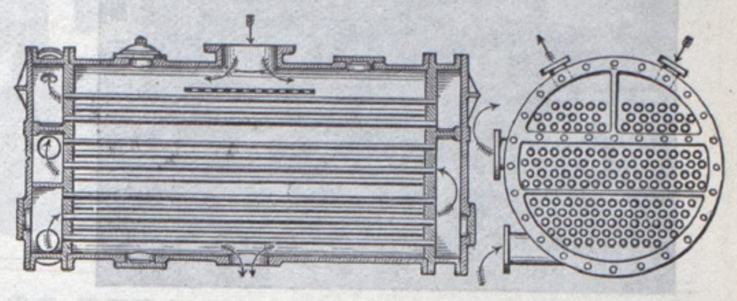

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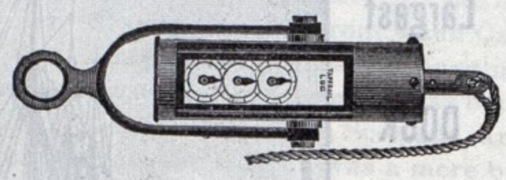

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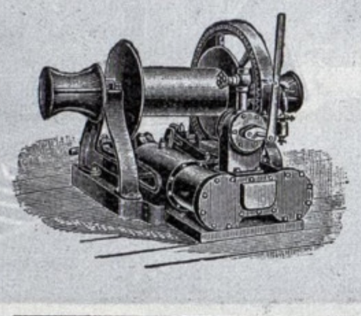

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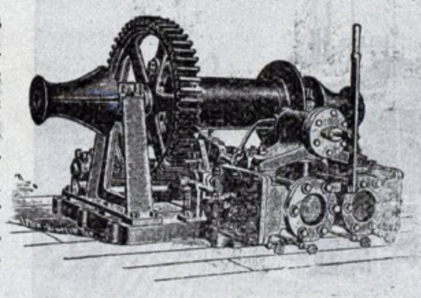

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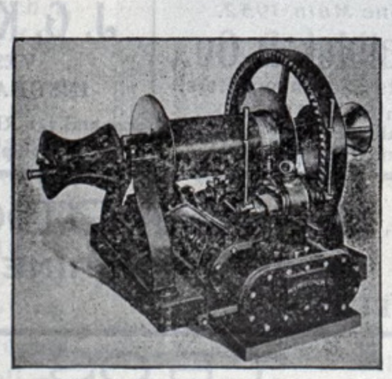

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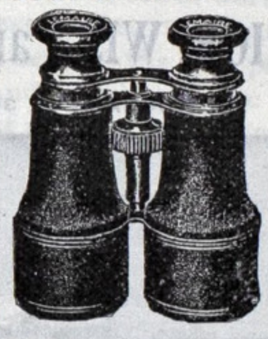

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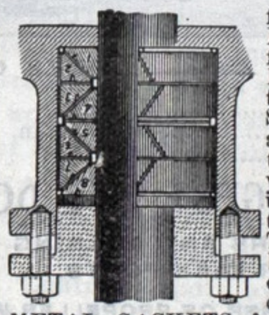

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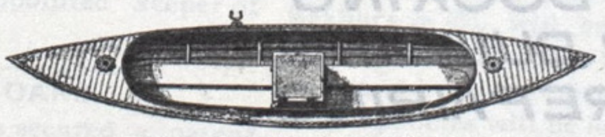

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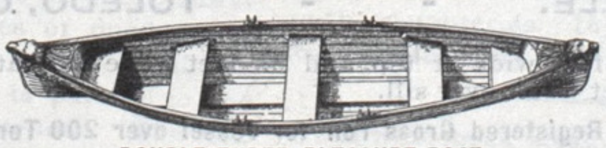

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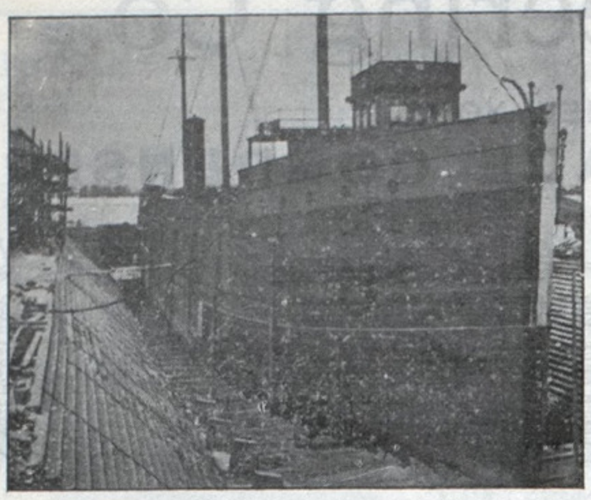

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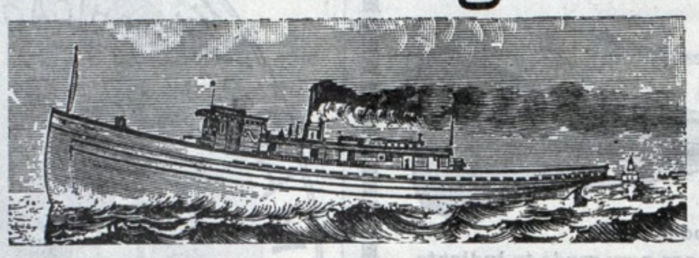

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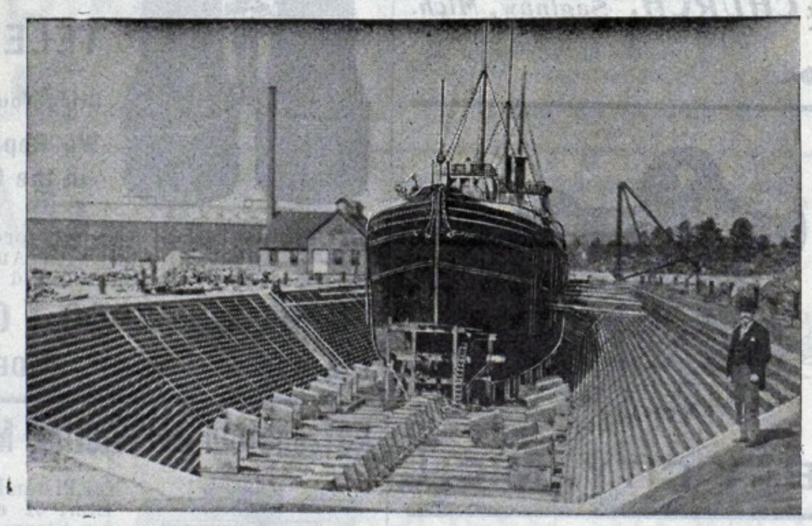

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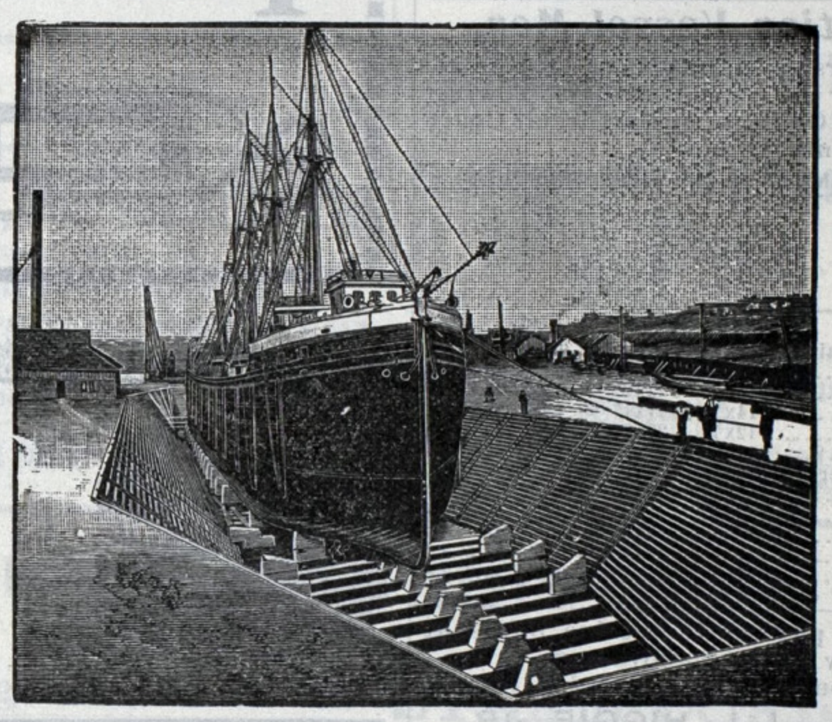

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